

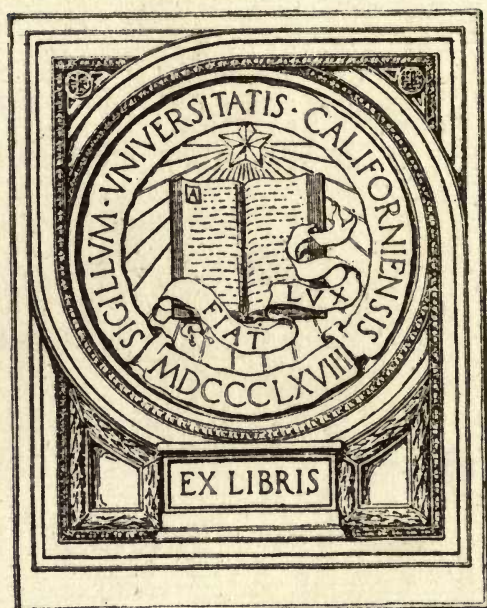
UC-NRLF



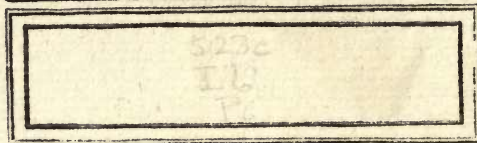
QB 617 601

THE INSTITUTE OF CHEMISTRY
OF GREAT BRITAIN AND IRELAND.

HISTORY OF THE INSTITUTE:
1877—1914.



EX LIBRIS



THE VIND
ANTHROPOLOGICAL



Elliott & Fry, Ltd.

SIR EDWARD FRANKLAND, K.C.B., D.C.L., F.R.S.
President: 1877—1880.

THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

Founded, 1877.

Incorporated by Royal Charter, 1885.

HISTORY OF THE INSTITUTE : 1877—1914.

COMPILED,

by direction of the Council of the Institute,

BY

RICHARD B. PILCHER,

REGISTRAR AND SECRETARY.

LONDON,

July, 1914.

CONTENTS.

	PAGE
LIST OF ILLUSTRATIONS	4
PREFACE	i—iv
INTRODUCTION :	
PROFESSIONAL ORGANISATION GENERALLY	5
THE ROYAL SOCIETY, THE CHEMICAL SOCIETY, AND OTHER SOCIETIES INTERESTED IN CHEMICAL SCIENCE	7—10
PROGRESS OF EDUCATION IN CHEMISTRY	11—22
ORIGIN AND FOUNDATION OF THE INSTITUTE	23
THE TITLE "CHEMIST"	45
HISTORY OF THE INSTITUTE : 1877—1914	50
APPENDIX	289
CONSTITUTION AND MANAGEMENT :	
THE COUNCIL	289
THE CENSORS	291
LIST OF PAST OFFICERS	295
THE ROLL OF THE INSTITUTE	300
INDEX	301

LIST OF ILLUSTRATIONS.

SIR EDWARD FRANKLAND, K.C.B., D.C.L., F.R.S., President 1877—1880	<i>Facing title-page.</i> PAGE
CHARLES ROMLEY ALDER WRIGHT, D.Sc., F.R.S., Honorary Treasurer 1877—1884	27
CHARLES EDWARD GROVES, F.R.S., Secretary 1877—1887; Registrar and Secretary 1887—1892	53
SIR FREDERICK AUGUSTUS ABEL, Bart., K.C.B., G.C.V.O., D.C.L., F.R.S., President 1880—1883	65
WILLIAM ODLING, M.A., M.B., F.R.S., President 1883—1888	75
JAMES BELL, C.B., D.Sc., Ph.D., F.R.S., President 1888—1891	91
SIR WILLIAM AUGUSTUS TILDEN, D.Sc., LL.D., F.R.S., President 1891—1894	101
NO. 30, BLOOMSBURY SQUARE	117
THE HALL; THE LABORATORY	121
THE OFFICE MANTELPIECE	122
THE SEAL	124
WILLIAM JAMES RUSSELL, Ph.D., F.R.S., President 1894—1897	131
SIR THOMAS STEVENSON, M.D., F.R.C.P., President 1897—1900	143
JOHN MILLAR THOMSON, LL.D., F.R.S., Honorary Registrar 1894—1900; President 1900—1903	153
DAVID HOWARD, Hon. Treasurer 1884—1903; President 1903— 1906	169
ALFRED GORDON SALAMON, A.R.S.M., Honorary Treasurer	175
PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S., President 1906—1909	193
GEORGE THOMAS BEILBY, LL.D., F.R.S., President 1909—1912	229
RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S., President	249
THE NEW BUILDING	283
RICHARD BERTRAM PILCHER, Registrar and Secretary	287

PREFACE.

THE Council of the Institute, in presenting this volume to the Fellows and Associates, believe that they will find therein many matters of interest. Those who have assisted in building up the Institute will have some satisfaction in recalling the past, and the younger members will become better acquainted with the circumstances which led to the foundation of the Institute and with the details of its subsequent development.

The history of the Institute should enable members to realise the initial difficulties overcome by the Founders and to understand more clearly the labours of successive Councils, not only in promoting the better education and in maintaining the status of professional chemists, but in drawing the competent together, whereby they have acquired a sense of mutual confidence as members of one body, and have secured a recognised position in the estimation of the public.

An endeavour has been made to give an accurate account of the progress of the Institute up to its thirty-seventh year, covering a period remarkable for the advancement of science and its industrial applications, and during which the practice of chemistry as a profession has become firmly established.

After an introduction dealing with professional organisation generally, with the foundation of societies interested in the advancement of science—particularly chemistry, and with the progress of education in chemistry, an account is given of the steps which led to the foundation of the Institute.

At a meeting held at the rooms of the Chemical Society on April 27th, 1876, to discuss the organisation of the chemical profession, Prof. Abel being in the Chair, a Committee of ten, with Mr. Walter Noel Hartley as Secretary, was appointed to confer with the Chemical Society with regard

to carrying out a scheme for establishing an organisation of professional chemists, with the provisional title of "The Institute of Professional Chemists of Great Britain and Ireland" — subsequently changed to "The Institute of Chemistry of Great Britain and Ireland." Counsel's opinion having been taken with reference to the powers of the Chemical Society under its Royal Charter, it was found that any "such alteration was undesirable." It was decided, therefore, to form a new association independent of the Chemical Society, and for this purpose a Committee was appointed "to settle the form and details of the scheme, and to take all steps necessary to secure the formation and incorporation of the proposed new association."

At a meeting of this Committee held on February 24th, 1877, Prof. Edward Frankland in the Chair, the report of a Sub-Committee was read, giving the "Draft Scheme" for the "Organisation of Professional Chemists." This, with slight modification, was unanimously adopted, and forty-eight gentlemen were elected as the first Fellows of the Institute. The first officers and Council were also elected, Prof. Frankland being asked to undertake the office of President, and Dr. C. R. Alder Wright that of Honorary Treasurer.

The aim of the Founders—the maintenance of the status and efficiency of the profession of chemistry—has been consistently and steadfastly pursued by those on whom the duty of directing the affairs of the Institute has devolved.

Each President in turn has established a claim to the gratitude of the members. With Prof. Edward Frankland, the first President, the idea of a registering corporation for competent analytical and consulting chemists appears to have originated. His term of office (1877—1880) was devoted to the formulation of regulations for the admission of members and generally to the determination of the work and policy of the Institute. His personal influence attracted a large number of the best chemists of that time to the new organisation. Prof. Frederick Augustus Abel took an active part in the early work of organisation and had the delicate duty, as President from 1880—1883, of guiding the Institute through a period when its strength was not yet assured

and the enthusiasm to which it owed its origin had in some measure cooled. During his presidency, the question of the reincorporation of the Institute under Act of Parliament or Royal Charter came under consideration, and, by the time that Dr. William Odling succeeded him, the deliberations had so far advanced that the Council were enabled to proceed with the negotiations and bring them to a successful conclusion.

Dr. Odling remained President for five years, during which the Council were engaged in determining and promoting the functions of the Institute as a chartered body. He was succeeded in 1888 by a representative of another branch of the profession, Dr. James Bell, then Principal of the Inland Revenue Laboratory, who was instrumental in securing a greater measure of recognition of the Institute by governmental authorities.

Under Prof. William Augustus Tilden (1891—1894) the affairs of the Institute were placed on a sounder foundation. It became possessed of its own premises and laboratories, the scheme of training for the Associateship was thoroughly revised, the examinations assumed a more serious character, and the members arrived at a better general understanding on questions of professional conduct—all of these advances being calculated to place the Institute in a position of greater influence and importance.

Under Dr. William James Russell (1894—1897), the schemes promulgated by his predecessor were ably carried out, while he endeavoured to consolidate the various interests and to promote closer relations among professional chemists. Dr. Thomas Stevenson (1897—1900), from his unique position as Analyst to the Home Office, was able to further the position of the Institute in its relation to the State. Mainly owing to his initiative, the Council established a special examination recognised by the Government for members desirous of practising as public analysts. Prof. John Millar Thomson (1900—1903), who had previously held office for six years as Honorary Registrar, devoted special attention to the furtherance of the educational work of the Institute; it will also be noticed that from this time the work of the Council in connection with matters of professional

interest steadily increased. Mr. David Howard (1903—1906), who had been Honorary Treasurer for nearly twenty years, was the first President of the Institute to represent the large body of chemists engaged in chemical industry. During his term of office, a Special Committee considered the question of the preparation of chemists for technological work, and on the advice of that Committee the examination in Chemical Technology was established, the Institute indicating the lines on which chemists in industry should pursue their studies so that they might more readily apply their knowledge to problems on a manufacturing scale. Prof. Percy Faraday Frankland (1906—1909) was the first President to be elected to the chair who had passed into the Institute by examination, and his experience as a Past-Examiner enabled him to initiate further means for developing the examination system of the Institute. Towards the close of his presidential period, the Council decided to open a fund for new buildings for the Institute. Dr. George Thomas Beilby (1909—1912) was the second President to represent chemical industry. His term of office was marked by the establishment of the Buildings Fund, and the institution of the scheme of lectures whereby the younger members and registered students are afforded an insight into the actual work of chemists in practice. During the presidency of Prof. Raphael Meldola—now in office—much attention has been given to professional and educational matters, and it is hoped that a remodelling of the Regulations for admission to the Institute may synchronise with the move into the new buildings, towards the close of the present year.

The Council record their thanks to Mr. E. W. Voelcker, Vice-President and Chairman of the Proceedings Committee under whose supervision the compilation has been carried out, and also to other Fellows who have read proofs and given valuable help in the work.

INTRODUCTION.

FROM very early times, societies have been formed for the promotion of the study of science generally or of particular branches of it, and when any branch has acquired sufficient practical importance as a profession the need has been felt for definite organisation among its members. It has become evident that results of importance are achieved more and more by the solidarity of organised bodies and less and less by the individual. Men engaged in the higher intellectual, as well as in the more mechanical, callings have realised the need for organisation, both for their own and the common good. Thus, the last century witnessed the growth of many societies and institutions representing the various branches of professional and technical service.

PROFES-
SIONAL
ORGANISATION.

In some cases—law and medicine—statutory powers have been acquired whereby practice is legally restricted to persons who have secured definite recognised qualifications; while in other cases, where such restriction has not so far been practicable, the public has learned to look for professional assistance from the members of those bodies which have been officially recognised by the grant of Royal Charters. Such bodies, therefore, by the best means in their power, have promoted the professional training and efficiency of their members. Successive councils, composed of representatives of the various branches of each calling, have brought together a consensus of the highest opinion on such matters, and have formed and reformed the principles on which are based the lines of service of their respective organisations. Conditions of membership have been imposed, examinations established, and, in the course of time, definite curricula evolved, directed to systematic preparation for professional life. Only competent service should be demanded: it is the duty of such organisations, therefore, to maintain the supply of such

PROFES-
SIONAL
ORGANISA-
TION

service, and their advancement in the esteem of the public is proportionate to the fulfilment of this duty.

It is interesting to consider briefly the organisation of professions generally in this country :—

Schools of Law were in existence early in the thirteenth century, and the origin of our present system of advocates with exclusive audience in the High Courts is said to date from 1292. The Inns of Chancery were formed mainly in the fourteenth and fifteenth centuries, and the earliest known use of the term " barrister " occurred in the Black Books of Lincoln's Inn, Trinity Term, 1455. On the decay of the Inns of Chancery, the Society of Gentlemen Practisers in the Courts of Law and Equity was formed and the Minutes of this Society, commencing in 1739, passed, in 1834, to the Law Society, which had been instituted in 1827 and afterwards received a Royal Charter in 1845, and Supplementary Charters in 1872, 1903 and 1909.

Organisation in the profession of Medicine dates from the year 1308, at which time reference was made, in the records preserved at the Guildhall of London, to the Barbers Company—the Barbers of London being then engaged in the practice of at least some branches of surgery. The Surgeons Guild is mentioned in the City records of 1369, when two masters were sworn before the Court of Aldermen and given power to report the faults of unskilful surgeons. Between the two bodies there was a keen rivalry, but towards the end of the fifteenth century they entered into an alliance which in the course of time developed into the Royal College of Surgeons, duly constituted under a Charter of George III. in 1800, and subsequently under a new Charter in 1859.

The Royal College of Physicians was founded and incorporated in 1518, with a view to the improvement and more orderly exercise of the art of physic and the repression of irregular unlearned and incompetent practitioners of that faculty.

In the domain of Art, it may be recalled that the Royal Academy was founded in 1768.

The professional and technical organisations incorporated by Royal Charter during the nineteenth and the early part of the twentieth centuries, include :—

	Royal Charter.
The Institution of Civil Engineers	1828
The Royal Institute of British Architects	1837 and 1887
The Pharmaceutical Society of Great Britain	1843
The College of Preceptors	1849
The Royal College of Surgeons of Edinburgh	1850
The Society of Accountants (Edinburgh)	1854
The Institute of Accountants (Glasgow)	1855
The Royal College of Physicians of Edinburgh (New Charter)	1861
The Society of Advocates in Aberdeen (New Charter)	1862
The Society of Accountants in Aberdeen	1867
The Faculty of Actuaries in Scotland	1868
The Institute of (Chartered) Accountants in England and Wales	1880
The Surveyors' Institution	1881
The Royal College of Music	1883
The Institute of Actuaries	1884

After the Institute of Chemistry of Great Britain and Ireland (1885) came :—

	Royal Charter.
The Institute of (Chartered) Accountants in Ireland .	1888
The Institute of Journalists	1890
The Chartered Institute of Patent Agents	1891
The Royal College of Organists	1893
The Chartered Institute of Secretaries	1902
The Institute of Directors	1906
The Institution of Naval Architects	1910
The Royal Society of Painters, Etchers and Engravers	1911
The Faculty of Surveyors of Scotland	1913

This progress of organisation has not only raised the status of professional men generally, but has contributed in a marked degree to the advance of knowledge, discovery and invention with which it has been coincident, and has proved of inestimable benefit to the general community. In the majority of cases the professional bodies had their origin in societies and institutions, usually more “social” in character, the membership of which was restricted to persons interested in a particular science or calling.

The Royal Society of London, which is regarded as THE ROYAL SOCIETY. the parent society of the scientific bodies in the country, has aimed at the advancement of science generally. It was founded in 1660, and in the history of the Society by Thos. Spratt, D.D., Lord Bishop of Rochester, reference occurs, under section XIV., to the “Chymists” of that period.

Discoursing on the ill effects of dogmatical philosophy he says : . . . “that a plain industrious Man, . . . is more likely to make a good Philosopher, than all the high, earnest, insulting Wits, who can bear neither Partnership, nor Opposition. The Chymists lay it down, as a necessary Qualification of their happy Man, to whom God will reveal their ador’d Elixir, that he must be rather innocent, and virtuous, than knowing. And if I were to form the Character of a true Philosopher, I would sure to make that the Foundation : Not that I believe, God will bestow any extraordinary Light in Nature, on such Men more than others ; but upon a bare rational Account : For certainly, such Men, whose Minds are so soft, so yielding, so complying, so large, are in a far better Way, than the bold and haughty Asserters : they will pass by nothing, by which they may learn ; they will be always ready to receive, and communicate observations ; they will not condemn the Fruits of others Diligence ; they will rejoice to see Mankind benefited, whether it be by themselves or others.”

In Section XVII., Dr. Spratt deals more fully with the Chymists, as follows :—

“The next Philosophers, whom I shall touch upon, are the Chymists, who have been more numerous, in this latter Age, than ever before And without question, they have lighted upon the right instrument of

THE ROYAL
SOCIETY.

great Productions and Alterations ; which must for the most part be perform'd by Fire. They may be divided into three Ranks : Such, as look after the Knowledge of Nature in general ; such, as seek out, and prepare Medicines ; and such, as search after Riches, by Transmutations, and the great Elixir. The two first have been very successful, in separating, compounding, and changing the Parts of Things ; and in shewing the admirable Powers of Nature, in the raising of new Constituencies, Figures, Colours, and Virtues of Bodies : And from their Labours, the true Philosophy is like to receive the noblest Improvements. But the Pretensions of the third Kind are, not only to indow us with all the Benefits of this Life, but with Immortality it self : And their Success has been as small, as their Design was extravagant. Their Writers involve them in such Darkness ; that I scarce know, which was the greatest Task, to understand their Meaning, or to effect it. And in the Chase of the Philosopher's Stone, they are so earnest, that they are scarce capable of any other Thoughts ; so that if an Experiment lye ever so little out of their Road, it is free from their Discovery ; as I have heard of some Creatures in Africk, which still going a violent Pace strait on, and not being able to turn themselves, can never get any Prey, but what they meet just in their Way. This Secret they prosecute so impetuously, that they believe they see some Footsteps of it, in every Line of Moses, Solomon, or Virgil. The Truth is, they are downright Enthusiasts about it. And seeing we cast Enthusiasm out of Divinity it self, we shall hardly sure be persuaded, to admit it into Philosophy. It were perhaps a vain Attempt, to try to cure such Men of their groundless Hopes. It may be they are happier now, as they are : And they would only cry out with the Man in Horace, that their Friends, who had restor'd them to a perfect sense, had murder'd them. But certainly, if they could be brought to content themselves with moderate Things, to grow rich by Degrees, and not to imagine, they shall gain the Indies out of every Crucible ; there might be wonderful Things expected from them. And of this we have good assurance, by what is come abroad from diverse eminent persons ; amongst whom some are Members of the Royal Society. And, if it were not already excellently perform'd by others, I might here speak largely, of the Advantages that accrue to Physick, by the industrious Labours of such Chymists, as have only the discreet and sober Flame, and not the wild Lightning of the others Brains."

The early chymists were generally held in small repute and were often the subject of jest. Thus, the Rev. Henry More, D.D., the Platonist,—a contemporary of Dr. Spratt,—in "A Brief Discourse of Enthusiasm" (Section XLIV.), indicates the attitude of people at that time towards them in his remark: "I have observed generally of the *Chymists* and *Theosophists*, as of several other men more palpably mad, that their thoughts are carried much to *Astrology*."

The Royal Society, notwithstanding its origin and objects, was, at first, scorned by the "wits," denounced by the classicists, and bemoaned by a section of the religious world as hostile to Christianity. Dr. Spratt felt obliged to enter into a lengthy discourse of defence in its behalf ; and, even a

century later, Dr. Johnson, in a contribution to the *Idler* (December 22nd, 1759), showed how little progress had been made and how little the Society was then esteemed by the general community :—

“ When the philosophers of the last age first congregated into the Royal Society, great expectations were raised of the sudden progress of useful arts ; the time was supposed to be near, when engines should turn by a perpetual motion, and health be secured by the universal medicine ; when learning should be facilitated by a real character, and commerce extended by ships which could reach their ports in defiance of the tempest.

“ But improvement is naturally slow. The Society met and parted without any visible diminution of the miseries of life. The gout and stone were still painful, the ground that was not ploughed brought no harvest, and neither oranges nor grapes would grow upon the hawthorn. At last, those who were disappointed began to be angry ; those, likewise, who hated innovation were glad to gain an opportunity of ridiculing men who had depreciated, perhaps with too much arrogance, the knowledge of antiquity. And it appears from some of their earliest apologies, that the philosophers felt with great sensibility the unwelcome importunities of those, who were daily asking, ‘ What have ye done ? ’

“ The truth is, that little had been done compared with what fame had been suffered to promise ; and the question could only be answered by general apologies and by new hopes, which, when they were frustrated, gave a new occasion to the same vexatious inquiry.”

A century later, however, found the Royal Society in an assured and unrivalled position, while knowledge and invention had advanced by more and more remarkable developments. Other societies having similar objects—including the advancement of chemical science—were founded in various parts of the country : The Royal Dublin Society, in 1731 ; The (Royal) Society of Arts, in 1754 ; The Manchester Literary and Philosophical Society, in 1781 ; The Royal Society of Edinburgh, in 1783 ; The Royal Institution of Great Britain, in 1800 ; The Royal Philosophical Society of Glasgow, in 1802 ; and The British Association for the Advancement of Science, in 1831.

OTHER
SCIENTIFIC
SOCIETIES.

There was a Chemical Section of the British Association from its foundation ; but no society of importance, exclusively devoted to the interests of the science of chemistry, existed in this, or indeed in any, country until 1841, when the Chemical Society of London was founded “ for the general advancement of Chemical Science, by the discussion and publication of new discoveries, and the interchange of valuable information respecting them.” In 1848, the Chemical Society was incorporated under a Royal Charter.

THE
CHEMICAL
SOCIETY
FOUNDED.

The Pharmaceutical Society of Great Britain, was founded in the same year as the Chemical Society, and incorporated under Royal Charter in 1843, "for the purpose of advancing Chemistry and Pharmacy, and promoting an uniform system of education of those who should practise the same, and also for the protection of those who carry on the business of Chemists and Druggists"; and "to provide a fund for the relief of the distressed Members and Associates of the Society, and of their widows and orphans." The School of the Society was instituted in 1842, and courses in practical laboratory work were fully established by 1844.

The French Chemical Society was founded in 1857, and the German Chemical Society in 1868.

The (Royal) Society of Arts, under the auspices of which many lectures on chemical subjects of industrial interest had been delivered from time to time, established, in 1874, a special section for the discussion of subjects connected with the application of chemistry to the arts and manufactures. The introductory address was delivered by Prof. Odling, then President of the Chemical Society, who not only dealt with the importance of chemical science in industry, but also indicated how its applications in this way had advanced chemical knowledge. It was arranged that six papers should be read every session. The first secretary of the section was Thomas Wills, who died in 1878, being succeeded by Prof. J. Millar Thomson, who held the office until the section was discontinued. The scope of the section was enlarged in 1879 to include matters connected with the practical applications of physical science, and the scheme worked successfully until 1886,* when the Council of the Society, having originated the movement and clearly demonstrated its usefulness, decided to relinquish it to the Society of Chemical Industry, which had been formed in 1881.

It may be recorded here that, at the Jubilee Meeting of the Chemical Society in 1891, Dr. W. J. Russell, then its President,

* The Section was closed with a paper by Prof. Raphael Meldola on "The Scientific Development of the Coal Tar Colour Industry," in which he described the foundation of the industry and pointed out the danger of its decline in England, urging, for the stoppage of such decline, a proper recognition of the teaching of applied science throughout the country.—*Journal of the Society of Arts*, July 2nd, 1886.

said that the number of real students of chemistry at the time of the foundation of the Society was very small; they were looked upon by their friends as eccentric young men who "would never do any good for themselves." On the same occasion, Dr. Russell referred to the progress of science, particularly chemistry, during the early part of the nineteenth century, and Dr. Lyon—later Lord—Playfair gave an interesting account of the workers contemporaneous with the foundation of the Society.

The history of British chemistry had already been marked by the important work and discoveries of Boyle, Priestley, Black, Cavendish, Dalton, Davy, Thomas Thomson, Wollaston, Faraday, Graham, and others; but, as yet, the science of chemistry, however interesting it might be as a pursuit for men of leisure, was not regarded as a subject which greatly concerned commerce and national progress. There was also a lack of laboratories for practical instruction. The teaching of science, generally, received very little attention at our universities and colleges. Technical schools, as we now understand the term, scarcely existed. The chemical laboratories then in existence were mainly accessory to the professional training of students in law, medicine, or engineering, who wished to learn as much of the science as would be useful to them. Organic chemistry was little known or studied in this country, and students who had means to go abroad went either to Liebig at Giessen, to Wöhler at Göttingen, or to Dumas in Paris.

From about 1845, however, the study of chemistry became increasingly popular, and many laboratories were opened. The equipment was exceedingly meagre compared with that now provided in universities and colleges, but any shortcomings in this respect were to a large extent counterbalanced by the enthusiasm which prevailed among both teachers and students.

Chemistry speedily became a more generally taught subject in the universities, colleges, and schools, and, in 1876, Prof. Edward Frankland was able to record that, in connection with the examinations of the Science and Art Department of the Board of Education, there were no fewer than 115 chemical laboratories in Great Britain and Ireland, in which 2,400 students were receiving practical instruction, as yet mainly of an elementary character.

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.

The following particulars of the foundations of Chairs in Chemistry in Great Britain and Ireland have been collected, with the help of the present professors. They bear evidence to the marked development in the teaching of chemistry during the latter half of the nineteenth century, and are reproduced as a matter of historical interest:—

ABERDEEN.

In the University of Aberdeen, the date of the foundation of the first Chair in Chemistry, 1505, has been taken as the date of the appointment of the first "Mediciner" in King's College. The present Chair was founded at Marischal College, in 1793, by Mrs. Barbara Blackwell, widow of a former Principal (Vice-Chancellor), and the first Professor of Chemistry was her nephew, Dr. George French. The exact date of the first practical classes is unknown, but Dr. French evidently gave practical instruction, as it was stipulated by the Senatus that he should not have furnaces in his class room—for fear of raising the insurance premium. In 1829, when he was seventy-nine years of age, he wished to depute the practical teaching to his assistant, and a MS. of Dr. William Knight, Professor of Natural Philosophy, shows that there were objections to this, partly because of the hour selected and partly on account of the class-room chosen for the purpose. Dr. French stated that he would suspend the class and resume it later in the old Chemistry class-room "if it remain in sufficient repair." He died in 1833, and was succeeded by Dr. Thomas Clark, best known for his method of softening hard waters and for his soap test for hardness. Dr. Clark complained that his practical class suffered from the competition of an extramural teacher of the name of Shier. At King's College, the duties of the Doctor or Professor of Medicine ("Mediciner"), originally intended to embrace instruction in all the branches of medical education, were restricted in 1839 to the teaching of Chemistry. In that year Dr. William Gregory, afterwards Professor of Chemistry in the University of Edinburgh, was appointed to the Chair. He was succeeded in 1844 by Dr. Andrew Fyfe. In 1860, King's College, Old Aberdeen, and Marischal College were united into the present University of Aberdeen. After the fusion, Dr. Fyfe held the Chair until his death in 1862. The subsequent Professors of Chemistry were: Dr. James Smith Brazier (1862—1888); Dr. Thomas Carnelley (1888—1890); and Dr. Francis Robert Japp (1890). Dr. Japp retires this year and will be succeeded by Dr. Frederick Soddy. There is also a Chair in Agricultural Chemistry in Marischal College at present held by Prof. James Hendrick.

ABERYST-
WYTH.

The University College of Wales, Aberystwyth, a constituent College of the University of Wales, possessed a small chemical laboratory at the time it was founded in 1872, when Prof. H. N. Grimley taught Mathematics, Natural Philosophy and Chemistry. In 1874, the Chair in Natural Science was founded, and was first occupied by Prof. Leonard Lyell, who was succeeded by Prof. F. W. Rudler (1875), and Prof. T. S. Humpidge (1878). The latter was appointed to the Chair in Chemistry established in 1884, the subsequent Professors being Dr. H. Lloyd Snape (1888), Dr. J. J. Sudborough (1901), and Dr. Alexander Findlay (1911). New laboratories—the Edward Davies Chemical Laboratories—were opened in 1909.

BANGOR.

The Chair in Chemistry in the University College of North Wales, Bangor, was established at the foundation of the College in 1884, the

first Professor of Chemistry being Dr. J. J. Dobbie—now Government Chemist. The laboratories were opened in 1885, in which year the College was incorporated; it became a constituent College of the University of Wales when the latter was established by Royal Charter in 1893. Dr. K. P. J. Orton succeeded Dr. Dobbie in 1903, and the accommodation in the laboratories was largely extended in 1911.

Queen's College—now Queen's University—Belfast, was founded BELFAST. in 1849, the first Professor of Chemistry being Dr. Thomas Andrews, who was known for his investigations on the behaviour of gases under pressure and for his work on ozone. A small laboratory for students existed prior to 1879, when Dr. E. A. Letts was appointed, the present laboratories being opened later, in 1894.

Mason Science College, now the University of Birmingham, was BIRMING- founded in 1880. The first Professor of Chemistry was Dr.—now HAM. Sir—William Augustus Tilden, who was appointed in the same year and held the position until 1894, when he proceeded to the Chair in the Royal College of Science, London, and was succeeded by Prof. Percy F. Frankland. In 1900, the College became incorporated by Royal Charter as the University of Birmingham, and, in 1910, the Chemical Department was transferred to the new University buildings at Edgbaston, where it occupies a large separate block of five storeys. There is a Department of Metallurgy, in which the Chair is held by Prof. Thomas Turner, and a Department of Brewing, in which the Chair is held by Prof. Adrian J. Brown.

The Merchant Venturers' Technical College, was founded as a "Trade BRISTOL. School" in 1856, and was taken over by the Merchant Venturers in 1885. The Chair in Chemistry was instituted in 1894, when Prof. Julius Wertheimer was appointed. Chemical laboratories were provided at the foundation. The College was destroyed by fire in 1906, and was rebuilt in 1909. The College now includes the Faculty of Engineering in the University of Bristol, in which Dr. Wertheimer holds the Chair of Applied Chemistry.

University College, Bristol, was founded in 1876. The first Professor of Chemistry was Dr. E. A. Letts, who was succeeded, in turn, by Prof.—now Sir—William Ramsay, Prof. Sydney Young, Prof. Morris W. Travers, and Prof. Francis Francis. In May, 1909, the College was incorporated by Royal Charter as the University of Bristol, the Chair of Chemistry, occupied by Prof. Francis, being then endowed by Mr. A. D. Capper Pass. The present laboratories were completed in October, 1909.

The Chair in Chemistry of the University of Cambridge was founded CAMBRIDGE. in 1702, and the Jacksonian Professorship of Natural Philosophy and Chemistry was established by a separate endowment in 1783. Among the former occupants of the Chair were Vigani (1703—1713), who showed that copper may be detected in its salts by precipitation with metallic iron; Richard Watson (1764—1773), who disproved the ancient view that water dissolves salts without changing in volume; Isaac Milner (1783—1792), who prepared nitric acid by passing ammonia over heated manganese dioxide; and Smithson Tennant (1813—1815), the discoverer of osmium and iridium. Mr. George Downing Liveing, who was placed first with distinction in Chemistry and Mineralogy in the Natural Sciences Tripos in the year of its establishment, 1851, instituted practical classes of laboratory instruction for undergraduates in the same year. In 1852, he transferred the practical classes to a new laboratory in St. John's College; in 1861, Mr. Liveing was elected

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.

to the Professorship of Chemistry and, in 1876, was provided with further accommodation for practical instruction in a part of the University buildings. The present Chemical Laboratory was built, under Prof. Liveing's supervision in 1887, and was considerably extended in 1908. Prof. W. J. Pope succeeded Prof. Liveing in 1908. Sir James Dewar has held the appointment of Jacksonian Professor of Natural Philosophy since 1875. In the Department of Metallurgy, Mr. C. T. Heycock is Goldsmiths' Reader, and in Chemical Physiology and Bio-Chemistry, Dr. F. Gowland Hopkins is University Reader and Praelector. In the Department of Agriculture Prof. T. B. Wood is Drapers' Professor.

CARDIFF.

University College of South Wales and Monmouthshire, Cardiff—a constituent College of the University of Wales since the foundation of the University in 1893—was founded in 1883, the Chair of Chemistry being established in the same year, when Dr. C. M. Thompson was appointed first Professor of Chemistry. There is also a Chair in Metallurgy which is held by Prof. A. A. Read.

CORK.

Queen's College, now University College, Cork, was founded under Act 8 & 9 Victoria, and was incorporated in 1845. The College was opened in 1849, the first Professor of Chemistry being Dr. John Blyth (1849—1871), who was succeeded by Dr. Maxwell Simpson (1872—1891). During the last two years of Prof. Simpson's tenure of office, Dr. A. Senior acted as Assistant or Deputy Professor. The present Professor—Dr. Augustus E. Dixon—was appointed in 1892. Systematic instruction in practical chemistry for medical students was provided in 1851.

DUBLIN.

The first mention of lectures in Chemistry of the University of Dublin and Trinity College occurs in an Order of the Provost and Senior Fellows, dated June 14th, 1710. Dr. Robert Griffith lectured in Chymistry at "ye opening of ye laboratory" on August 16th, 1711. Dr. William Smyth, senior, succeeded Dr. Griffith as Lecturer in Chemistry in 1717, and the position was held subsequently by Dr. William Stephens (1732), Dr. Francis Hutcheson (1760), Dr. James Span (1767), and Dr. James Thornton (1773). Dr. Robert Perceval was elected Lecturer in 1783 and continued as Professor by Act 25 George III., 1785, until 1808. Practical instruction in Chemistry appears to have been introduced at an early date compared with most other institutions of University character. In Dr. Kirkpatrick's "History of the Medical Teaching in Trinity College, Dublin" (1912), it is stated that, "Dr. Perceval was permitted to employ Dr. Francis Barker to assist him with the chemistry lectures by giving a private course in the laboratory," and, in 1803, funds were provided in order to fit up the chemical laboratory. The Chair was afterwards held by Dr. Francis Barker (1809), Dr. James Apjohn (1850), Dr. James Emerson Reynolds (1875), and Dr. Sydney Young (1903 to the present time). The Professorship of Applied Chemistry was founded in 1841. The present holder of this appointment is Prof. Emil Alphonse Werner.

The Royal College of Science for Ireland, Dublin, had its origin in the Museum of Irish Industry, situated in St. Stephen's Green, an institution founded by the State in 1845, with the object of promoting "industrial science and education and the improvement of mining, metallurgy and mechanical and chemical manufactures in Ireland." The first teachers of Chemistry were Dr. W. K. Sullivan and Mons. Gages. The College was reconstituted under a Treasury Minute of January, 1867, when Dr. Sullivan was appointed Professor of Chemistry and Mr. Robert Galloway Professor of Applied Chemistry. Practical

instruction formed an essential part of the curriculum. In 1873, the courses in Theoretical and Practical Chemistry were united under one Chair, held until 1879 by Prof. Galloway, who was then succeeded by Prof.—later Sir—Walter Noel Hartley, under whose *régime* the chemical division of the College became prominent as a centre of spectroscopic investigation. The present building was opened on July 8th, 1911, and Dr. Gilbert T. Morgan was appointed to the Chair on the resignation of Sir Walter Hartley in the same year.

University College, Dundee, was founded in 1880, and endowed DUNDEE mainly by Miss M. A. Baxter, who also provided funds for the erection of a chemical laboratory. Dr. Thomas Carnelley was appointed first Professor of Chemistry in 1882, and the first session was opened in October, 1883. The College became affiliated to the University of St. Andrews in 1890; the union was severed in January, 1895, and was restored in January, 1897. Prof. Carnelley was succeeded, in 1888, by Prof. Percy F. Frankland, who held the appointment until 1894, when Prof. James Walker was appointed. A large addition to the old laboratory was made in Dr. Walker's time, and, on his appointment to the Chair in Edinburgh University, in 1908, he was succeeded by Prof. Hugh Marshall, on whose death, in 1913, Dr. Alex. McKenzie was appointed.

Heriot-Watt College, Edinburgh, was founded, in 1821, as the EDINBURGH. School of Arts, to provide education in the principles of science for the industrial classes. In 1851, under a scheme to perpetuate the memory of James Watt, the institution became the Watt Institution and School of Arts; in 1886, under a scheme obtained from the Educational Endowments (Scotland) Commission of 1885, the endowment of the Watt Institute and School of Arts was amalgamated with that of George Heriot's Hospital, and, under a new Governing Body known as George Heriot's Trust, became the Heriot-Watt College. The first occupant of the Chair of Chemistry was Dr. Fyfe, appointed at the time of the foundation of the College. He was succeeded, in turn, by Dr. Stevenson Macadam, Dr. W. H. Perkin, junior (1887), and Dr. John Gibson (1892), who died on January 1st, 1914. There appears to be no exact record as to the beginning of practical instruction in Chemistry in the College, but it was certainly given prior to 1878; new laboratories were built during the time of Prof. Perkin, and a further extensive range of new laboratories was completed in October, 1913.

The University of Edinburgh was founded in 1582, the Chair of Chemistry and Medicine being established in 1713, when Dr. James Crawford was appointed the first Professor in these subjects. Regular lectures on Chemistry were given by Dr. William Cullen, appointed in 1755; he was succeeded, in turn, by Dr. Joseph Black (1766) and Dr. Thomas Charles Hope (1795). The latter obtained the sanction of the Senatus, in 1823, to form a class of Practical Chemistry conducted by his assistant, Dr. John Anderson. This class has been continued to the present day as the practical class for medical students. In 1832, Dr. William Gregory and Dr. D. B. Reid held practical classes, at Roxburgh Place, Edinburgh, in connection with the University. Dr. Gregory, who succeeded to Prof. Hope, in 1844, received the title Professor of Chemistry only. A teaching laboratory existed in his time in addition to that for the medical practical class, but only a few students attended, and, during the winter 1857—58, Alexander Crum Brown was the only student working there. The laboratory became really useful during the term of office of Dr. Lyon Playfair (1858—1869).

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.
GALWAY.

Prof. Crum Brown succeeded Dr. Playfair; the present laboratories were opened in 1885 and have since been more than once extended. Prof. James Walker succeeded to the Chair in 1908. Plans are now being prepared for the erection of a large Chemistry Department on a new site.

Queen's College, Galway, was founded under the provisions of the Act VIII. and IX. Victoria, cap. 66, entitled "An Act to enable Her Majesty to endow new Colleges for the Advancement of Learning in Ireland." The College was opened in 1849, and remained a College of Queen's University from 1850 to 1882, when it came under the Charter of the Royal University (1882—1909), and eventually, under the Irish Universities Act, 1908, became University College, Galway, a constituent College of the National University of Ireland, the first session opening October 31st, 1909. The first Professor of Chemistry was Edmond Ronalds (1849—1856), who was for a time Editor of the *Journal of the Chemical Society*, and who gave practical laboratory instruction from the opening of the College. His successor was Prof. Thomas Henry Rowney (1856—1889), a former pupil and private assistant of Hofmann. Prof. Augustus Edward Dixon held the Chair from 1889 to 1891, when he proceeded to the corresponding Professorship in Queen's College, Cork, and was succeeded by Professor Alfred Senior, the present holder of the Chair.

GLASGOW.

The Royal Technical, Glasgow, had its origin in Anderson's College, founded in 1796, which was re-organised as the Glasgow and West of Scotland Technical College in 1886, and was re-named at the request of King George V. "The Royal Technical College, Glasgow," in 1912, becoming affiliated to the University of Glasgow in the following year. The first Professor of Chemistry and Natural Philosophy was Dr. Thomas Garnett (1796), his successors being Dr. George Birkbeck (1799) and Dr. Andrew Ure (1804). The first Professor of Chemistry (only) was Prof. Thomas Graham (1830) by whom a laboratory was equipped for the instruction of students in Practical Chemistry. He continued to occupy the Chair until 1837, being succeeded, in turn, by Dr. William Gregory (1837), Dr. Frederick Penny (1839), Dr. T. E.—now Sir Edward—Thorpe (1870), Dr. William Dittmar (1874), and Dr. George Gerald Henderson (1892 to the present time). The Young Chair of Technical Chemistry was founded in 1870, the holders, in succession, being Dr.—later Sir—W. H. Perkin (1870), G. Bischof (1871), Dr. Edmund J. Mills (1875), and Dr. Thomas Gray, who has held the Chair since 1902. The Chair in Metallurgy is held by Prof. Alfred Campion, and there are Special Lecturers on Bleaching, Dyeing, Calico Printing, and Finishing, on Sugar Manufacture, on Gas Manufacture, and on Paper Making.

The University of Glasgow was established in 1450—1. There were Lecturers in Chemistry appointed by the University from 1747: William Cullen (1747), Joseph Black (1756), John Robison (1766), William Irvine (1769), Thomas C. Hope (1787), and Robert Cleghorn (1791). The Chair of Chemistry was founded by George III. in 1817, when Dr. Thomas Thomson was appointed. He was the first to make Dalton's theory generally known, in the third edition of his "System of Chemistry" (1807), and was one of the earliest teachers to afford facilities for students working at practical chemistry. He was succeeded by Dr. Thomas Anderson, in 1852, and Prof. John Ferguson, the present occupant, in 1874. In Metallurgical Chemistry Dr. Cecil H. Desch is the Graham Young Lecturer.

The Yorkshire College, Leeds, of Science was founded in 1874 and became a College in the Victoria University in 1887, the first Professor

of Chemistry being Dr. T. E.—now Sir Edward—Thorpe. Laboratories were provided in 1884, and Prof. Arthur Smithells succeeded to the Chair in the following year. In 1887, Yorkshire College became a constituent College of the federal Victoria University, Manchester, and in 1904 was created the University of Leeds. The Professorship in Organic Chemistry was established in the same year, Dr. J. B. Cohen being the first holder of that Chair. There are, in addition, departments of Applied Chemistry; that of Tinctorial Chemistry and Dyeing was founded in 1880, the Professorship being established in 1885, the first Professor being J. J. Hummel, who died in 1908 and was succeeded by Prof. A. G. Green. The appointment of Lecturer and Research Chemist in the Department is held by Mr. A. G. Perkin. The Department of Leather Industries was founded in 1890, the Professorship being established in 1896. Prof. H. R. Procter, who was appointed the first Professor, has lately retired and has been succeeded by Prof. E. Stiasny. In 1906, a Department and Professorship in Coal, Gas and Fuel Industries with Metallurgy was established, Prof. W. A. Bone being appointed first Livesey Professor and holding the appointment until 1913, when he was succeeded by Prof. J. W. Cobb. The Department of Agricultural Chemistry was founded in 1900, and a Professorship was established in 1913, when Dr. C. Crowther, who had previously been in charge of this Department, was appointed to the Chair. LEEDS.

University College, Liverpool, was founded in 1881, and was admitted a College in the Victoria University in 1884. The first Professor of Chemistry was Dr. James Campbell Brown, who held the appointment until 1903, when the College became constituted the University of Liverpool. Prof. Brown continued as Grant Professor of Chemistry until his death in 1910, when he was succeeded by Prof. E. C. C. Baly, the present holder of the Chair. The Chair in Bio-Chemistry is held by Prof. Benjamin Moore. LIVERPOOL.

The City and Guilds of London Institute was founded by an association of the Corporation and the Livery Companies of the City of London in 1878, was incorporated under the Companies Act in 1880, and received the grant of a Royal Charter in 1900. Two of its constituent institutions, the Technical College, Finsbury, and the Central Technical College, which may be regarded as the forerunners of other institutions with similar objects throughout the Empire, are concerned with the advancement of science and engineering, especially applied to productive and technical industries. LONDON.

The Technical College, Finsbury, was established in 1878, the earlier classes being held in the rooms in the Cowper Street Schools temporarily rented for the purpose, the first Professor of Chemistry being Prof. Henry E. Armstrong. In 1883, the work was transferred to the premises in Leonard Street, City Road, where day and evening courses were provided. In 1885, Prof. Armstrong proceeded to the Chair at the Central Technical College, South Kensington, and Prof. Raphael Meldola was appointed Professor at Finsbury, which position he still holds.

The City and Guilds Central Technical College, South Kensington, was completed in 1884, and on the re-organisation of the University of London, in 1889, was included as a School of the University in the Faculty of Engineering. In 1907 the College became the Engineering Section of the Imperial College of Science and Technology. In 1913 the Chemical Section was discontinued, the work of the Department being carried on in the Royal College of Science.

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.

The Imperial College of Science and Technology, South Kensington, consists of The Royal School of Mines, The Royal College of Science, and The City and Guilds Engineering College.

The origin of the City and Guilds Engineering College is referred to above; that of the Royal School of Mines may be traced to 1841, when Mr. Richard Phillips, Curator of the Museum of Economic Geology, at 6, Craig's Court, Westminster, received pupils for instruction in analytical chemistry, metallurgy and mineralogy. In 1844 Dr. Lyon—later Lord—Playfair, who had been previously assistant to Dr. Thomas Graham, joined Mr. Phillips in the control of the laboratories of the Museum of Economic Geology, where he remained until 1851, when the Government School of Mines was founded. The Museum was transferred to Jermyn Street, and became known as the Metropolitan School of Science; Dr. Playfair was appointed "Lecturer on Chemistry applied to the Arts and Agriculture," and held that position until 1853, when he became Secretary of the newly created Science and Art Department. In the meantime, in 1845, the Royal College of Chemistry had been founded and established in Oxford Street, under the direction of Prof. A. W. Hofmann, who attained eminent reputation as a teacher, a remarkable number of his students subsequently achieving distinction in various branches of the profession. The appointment of Prof. Hofmann was mainly due to Liebig, who had visited this country in 1837 and in 1842 and had disseminated his views on the importance of the practical applications of chemistry. On the retirement of Dr. Playfair from the Metropolitan School of Science, the Lectureship in that Institution was offered to Prof. Hofmann, and this proposal led to the amalgamation of the two Institutions. Thus in October, 1853, the College of Chemistry became the Chemical Department of the School, and remained so until its name was changed, in 1863, to the Royal School of Mines. Prof. Hofmann then returned to his own country to organise a chemical institution in the University of Bonn, and in the following year was elected Professor of Chemistry in the University of Berlin. He had been granted three years' leave, and during his absence his place was occupied by Dr.—later Sir—Edward Frankland, who was officially appointed Professor of Chemistry in the Royal School of Mines in 1865. The School was transferred to South Kensington in 1872, and, in 1880, became the Chemical Department of the Normal School of Science, which since 1890 has been known as the Royal College of Science. Prof. Frankland retired in 1885, and was succeeded by Prof. T. E.—now Sir Edward—Thorpe, and Prof.—now Sir William—Tilden, appointed in 1894. After the latter retired, in 1909, Sir Edward Thorpe returned until 1913, when Prof. H. Brereton Baker was appointed. The Chair in Metallurgy in the Royal School of Mines was founded in 1851, and was held in turn by Dr. John Percy, Sir W. Chandler Roberts-Austen (1879), Prof. William Gowland (1902), and Prof. W. A. Carlyle (1909). On the retirement of Prof. Carlyle, in 1913, Prof. Gowland returned to hold the Chair for one year pending the appointment of Prof. H. C. H. Carpenter.

King's College, London, was founded by Royal Charter in 1829 "for the purpose of giving instruction in the various branches of literature and science and the doctrines and duties of Christianity as the same are inculcated by the United Church of England and Ireland." The first Professor of Chemistry was Dr. John Frederick Daniell, who was appointed in 1831, and conducted practical classes from about 1836 until 1845, when he was succeeded by Dr. W. A. Miller. Prof. John Eddowes Bowman was appointed Professor of Practical Chemistry

LONDON.

in 1851, and was succeeded by Prof. C. L. Bloxam in 1856, the latter proceeding to the principal Professorship in succession to Dr. Miller in 1870 and holding the appointment until 1887, when Prof. John Millar Thomson was elected to the Chair. In 1905, Prof. Thomson was appointed Daniell Professor of General and Inorganic Chemistry, and Prof. Herbert Jackson was appointed Professor of Organic Chemistry. Prof. Thomson has retired this year; Prof. Jackson has been appointed Head of the Department with the title of Daniell Professor of Chemistry, and Prof. Arthur W. Crossley has also been appointed to a Professorship of Chemistry in the College. The Chair in Metallurgy is held by Prof. A. K. Huntington.

The School of the Pharmaceutical Society of Great Britain was established shortly after the foundation of the Society in 1841, a laboratory for practical instruction being provided in the basement of the Society's house in Bloomsbury Square, and the first Professor of Chemistry being George Fownes (1842—1846). In 1842 lectures were delivered by Dr. Anthony Todd Thomson, Dr. Pereira, Prof. Fownes and Dr. Redwood, the last-mentioned succeeding Prof. Fownes as Professor of Chemistry in 1846 and holding the appointment until 1885. In 1862 a Chair of Practical Chemistry was created and was held by Dr. John Attfield until 1896. Prof. Wyndham R. Dunstan was appointed to succeed Dr. Redwood in 1885 and held the Chair until 1895. In 1896 Prof. John Norman Collie was appointed Professor of Chemistry and Physics, being succeeded, in turn, by Prof. W. Palmer Wynne (1902), and Prof. Arthur W. Crossley, who having held the position since 1904 proceeds to King's College this year.

University College, London, was founded in 1826 and opened in 1828, receiving a Charter as "The University of London" in 1836, which was annulled in 1869. The first Professor of Chemistry was Dr. Edward Turner, who was appointed in 1828. He was a Pupil of Stromeyer of Göttingen and author of a well-known text-book and of papers on the analysis of minerals and mineral waters. He was succeeded by Dr. Thomas Graham in 1837, who had been previously Professor in the Andersonian University of Glasgow and who afterwards succeeded Sir John Herschell as Master of the Mint. In 1841, the Birkbeck Laboratory was opened, at a cost of over £2,500, and, in 1845, Dr. George Fownes was appointed Professor of Practical Chemistry. He was a pupil of Liebig and acted as Secretary to the Chemical Society for some years. His successor was Prof. Alexander W. Williamson (1848), a pupil of Gmelin and of Liebig, who became full Professor in 1856, and was succeeded, in 1887, by Sir William Ramsay. In 1878, Dr. Charles Graham was appointed Professor of Technical Chemistry and held that position, occupying the Birkbeck Laboratory, until 1889; Prof. Watson Smith was Lecturer on Technical Chemistry from 1889—1893. In 1902, Sir William Ramsay became Professor of Inorganic Chemistry, and Dr. John Norman Collie was appointed Professor of Organic Chemistry. On the retirement of Sir William Ramsay, in 1913, Prof. F. G. Donnan was appointed to the Chair of Inorganic Chemistry.

The University, Manchester, was founded as Owens College in 1849, MAN-
was opened in 1851, and became incorporated as the University of Man-
chester in 1904. Pending the erection of the College, a chemical labora-
tory and lecture room were found in St. John Street, Deansgate, where
Prof.—later Sir—Edward Frankland, who had been appointed to
the Chair of Chemistry at the foundation of the College, gave his
first course of lectures and practical instruction. The laboratories in
Quay Street, when opened in 1851, were held by Prof. Frankland to
be "superior in convenience, for elementary and advanced students,

CHESTER.

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.

and in light, warming and ventilation, to any other laboratory in Great Britain." In 1857, Prof. Frankland proceeded to London to the Lectureship at St. Bartholomew's Hospital, and Prof.—now Sir—Henry Roscoe was appointed to the vacant Chair. From 1860, the College entered on a career of steady expansion; by 1873, the accommodation had become inadequate for the increasing number of students, and the College was removed to Oxford Street, where Sir Henry Roscoe designed the large chemical laboratories now named after him. In 1874, Prof. Carl Schorlemmer was appointed to the first Chair of Organic Chemistry. In 1885, Sir Henry Roscoe became Member of Parliament for South Manchester, and in the following year tendered his resignation of the Directorship of the Chemical Department. He was succeeded by Prof. Harold Baily Dixon, who still holds the appointment. On the death of Prof. Schorlemmer, in 1892, Prof. W. H. Perkin was appointed to the Chair of Organic Chemistry, which he held until 1913, when he was elected Waynflete Professor of Chemistry in Oxford University. Dr. Arthur Lapworth was then appointed as his successor in Manchester. In addition to the original Roscoe Laboratories, the Chemical Department includes the "Schorlemmer" Laboratory for organic research, the "John Morley" Laboratories for third year students, the "Schunck" Laboratory and Library, and thirty smaller rooms for research work. The Chair in Metallurgy in the University is held by Prof. C. A. Edwards.

The Municipal School of Technology, Manchester, had its origin in the Mechanics' Institution founded in that city in 1824. The Institution, becoming increasingly useful, was extended to new buildings from time to time, and, in 1883, its name was changed to that of "The Technical School," specialised courses of instruction for day students being organised in Chemistry, Engineering and the Textile Industries. The present buildings, which were in course of erection from 1895—1902, include a separate building for the accommodation of such branches of Applied Chemistry as the dyeing, bleaching and printing of textile goods and the manufacture, dyeing and finishing of paper. In the meantime, in 1901, the title of the Institution had been changed to the Municipal School of Technology, Manchester, and at the opening of the session of 1903, under a provision made in the Charter of the University of Manchester, the School became instituted the Faculty of Technology in the University. The Chair of Chemistry was then held by Prof. W. J. Pope, but, on his leaving to go to Cambridge in 1910, the title of the Chair was altered to that of Professor of Technological Chemistry, and the position has since been held by Dr. Edmund Knecht. The Director of the Department for Bleaching, Dyeing, Printing, and Finishing, and Paper Manufacture, is Mr. Julius Hübner, and there are Departments in Metallurgy, in which Mr. E. L. Rhead is Lecturer, and in Brewing, in which Mr. James Grant is Lecturer.

NEWCASTLE-
ON-TYNE.

Armstrong College, Newcastle-on-Tyne, was founded, as the University of Durham College of Physical Science, in 1871, the first Professor of Chemistry being A. Freire Marreco, who died in 1882, and was succeeded by Prof. P. Phillip Bedson who holds the appointment at the present time. Provision was made for the teaching of Practical Chemistry from the foundation, but the laboratories were in temporary premises attached to the College of Medicine and the Wood Memorial Hall until 1888, when the present laboratories were opened. The Chemical Department has since been considerably extended. There are laboratories for teaching and research in the Agricultural Department, founded in 1892, the Lecturer in Agricultural Chemistry being

Mr. S. Hoare Collins, and metallurgical laboratories for instruction in assaying, etc., in charge of Prof. Henry Louis, who holds the appointment of William Cochrane Lecturer in Metallurgy.

University College, Nottingham, was opened in 1881, and was divided into four Departments, of which one was Chemistry. Prof. Frank Clowes was appointed first Professor of Chemistry in 1881, and occupied the Chair until his appointment as Chemist to the London County Council in 1897, when he was succeeded by Prof. F. S. Kipping. Chemical Laboratories were equipped for practical work at the foundation and additions have been made from time to time.

Roger Bacon (born 1214), inventor of gunpowder, is said to have completed his studies at Oxford and to have taken Orders in 1233. In the seventeenth century Oxford was a centre of scientific research. Thomas Willis (born 1621), Professor of Natural Philosophy, was the last of the school of iatrochemists. Christopher Wren (born 1632), Professor of Astronomy, was a chemist and architect. Robert Boyle (born 1637), one of the founders of the Royal Society, author of various physical and chemical papers, formulated the important conception of the formation of salts by the neutralisation of acids by bases. Robert Hooke (born 1635), Student of Christ Church, some time Boyle's assistant, was the author of "Micrographia" and a tract on flame—"Lampas" and the nature of Combustion. John Mayow (born 1645), Fellow of All Souls, physician and chemist, proved the dual nature of air, controverting the universal view of its elementary character and showed that a part was essential to burning and respiration while another part was inert—a near approach to the discovery of oxygen. Dr. Frewin, of Christ Church was for a time Professor of Chemistry, in 1708, but shortly after became Professor of Ancient History. William Higgins, of Pembroke College, published in 1709 "A Comparative View of the Phlogistic and Antiphlogistic Theories," in which he discussed the nature of chemical combination, using symbols for the elements and linking them together; he introduced the idea of multiple proportions, thus partly anticipating Dalton's Theory. In more recent times, Dr. Daubeney, about 1850, was Professor of Chemistry, having a laboratory at Magdalen College in the Physic Garden. Later, in 1854, a cellar at Balliol College was fitted up as a laboratory, and the basement of the Ashmolean Museum was used as a chemical laboratory by the Professor of Mineralogy. Sir Benjamin Brodie was appointed Aldrichian Professor of Chemistry in 1855, and on the opening of the Laboratories at the University Museum in 1860 removed there from Balliol, and later became Waynflete Professor. Dr. W. Odling succeeded to the Chair in 1872, and held the office for over forty years, being followed by Dr. W. H. Perkin in 1913. A new Laboratory, designed for teaching and research in Organic Chemistry, is in course of construction and will be probably available at the beginning of 1915. A Chemical Laboratory has been recently added to the School of Rural Economy for work in Agricultural Chemistry, which Department is under the direction of Prof. W. Somerville. The Christ Church Museum (Lee's Building) was originally intended for Anatomy and Natural History, but the collections were transferred to the University Museum in or about 1865, and, soon after, Dr. A. G. Vernon Harcourt applied to the Dean and Chapter for the use of the building as a chemical laboratory. From that time until his retirement in 1902 the laboratory was in full operation for teaching and research. On the appointment of his successor, Dr. H. B. Baker, the Lee's Reader became a University Reader, and in future, under the Statute of 1914, there will be a Lee's Professor of Chemistry in the

THE PRO-
GRESS OF
EDUCATION
IN
CHEMISTRY.

University of Oxford. Dr. Harcourt was University Demonstrator for a time before becoming Lee's Reader at Christ Church; he was followed by Mr. H. G. Madan, 1866—1869; then by Mr. T. H. G. Wyndham, 1869—1872; from which year Mr. W. W. Fisher has held the position of Aldrichian Demonstrator. Other Chemical Laboratories have been established at Balliol, Magdalen, Jesus and Queen's Colleges, and in most Colleges Tutors or Lecturers in Chemistry have been appointed, many holding Foundation Fellowships.

ST.
ANDREWS.

The University of St. Andrews was founded in 1411, the Colleges of St. Salvator and St. Leonard being united by Act of Parliament in 1747, and embracing the Faculties of Arts, Science and Medicine. The Chair of Chemistry in the United College was established in 1808, but the tuition afforded in the subject was mainly ancillary to the usual course of medical training until 1840, when Chemistry was taught as a separate subject. The first Professor under the amended Regulations was Dr. Arthur Connell, who instituted practical work, though the course given was confined to inorganic work and mineral analysis. The laboratory was small and the apparatus almost alchemical in its nature. Dr. Connell was succeeded, in 1862, by Prof. M. Forster Heddle, who carried on the work begun by Dr. Connell. Prof. Thomas Purdie, who succeeded Prof. Heddle in 1884, introduced Practical Organic Chemistry, and built a special Research Institute. Under his guidance the Department made great progress. Dr. J. C. Irvine, who was appointed in 1909, in succession to Dr. Purdie, is the present occupant of the Chair.

SHEFFIELD.

Firth College, Sheffield, was founded in 1879 by Mark Firth, who made many other benefactions to the city, for the provision of lectures and classes in connection with the extension of University education. One-third of the endowment of £10,000, given by him to the College was definitely allocated to the Chair of Chemistry. When Firth College, together with the Medical School and the Technical School, was merged into the University College of Sheffield by Charter in the year 1897, the Chair was assigned the style of "Firth Chair of Chemistry," and has since been known by this name. The University College developed into the University, Sheffield, in 1905. The first Professor of Chemistry was Dr. T. Carnelley, who was succeeded by Prof. W. Carleton Williams in 1883, the Chair being held since 1904 by Prof. W. P. Wynne. In the Department of Applied Chemistry, the Chair is held by Prof. L. T. O'Shea, and in Metallurgy by Prof. J. O. Arnold.

With the increasing provision of facilities for scientific training, there very soon arose a steadily growing body of practising professional chemists.

The progress of scientific education was so rapid that, in 1912, when the fourth edition of "Official Chemical Appointments" was published, the list of Universities, Technical Colleges and Institutions in Great Britain and Ireland affording instruction in chemistry and allied subjects numbered 260, the professors and teachers numbered 836, and the list of Public and Secondary Schools wherein chemistry was taught numbered 569.

ORIGIN AND FOUNDATION OF THE INSTITUTE OF CHEMISTRY

In 1867, a discussion was raised among the Fellows of the Chemical Society as to the conditions for admission to the Fellowship of the Society, some contending that it should confer distinction on the holder, who should therefore have been required to show that he was entitled to be regarded as competent to practise; others maintaining that the Charter intended that anyone really interested in the advancement of chemical science should be eligible for election, provided he had the support of the necessary number of Fellows. The Council of the Society referred the matter to a Committee whose report was approved and published. This Committee did not recommend any immediate alteration in the Bye-Laws, but advised that the form of recommendation to be filled in by a candidate should be signed by five instead of three Fellows, and that three at least should sign from personal knowledge; further, that the candidate, instead of stating his "Profession, Position or Occupation," should state his "Qualification or Occupation." In order to effect the election of a candidate, the Bye-Laws required that three-fourths of the votes taken at a meeting of Fellows should be in his favour. The Committee recommended that, in the event of any improper use being made of this requirement, the Bye-Law should be altered to render election valid by a mere majority, or that the Society should delegate the power of election to a large Committee to be appointed for the purpose.

THE NEED
OF A QUALI-
FICATION FOR
PROFES-
SIONAL
CHEMISTS.

It will be noted that this discussion was revived ten years later, in connection with the foundation of the Institute.

In April, 1872, a correspondent—"A. T."—writing to the *Chemical News* suggested that the Chemical Society should confer some form of recognition on Fellows of the Society who

distinguished themselves by original work in any branch of physical and general chemistry.

It will be seen, therefore, that an association closely connected with the interests of professional chemists seems to have suggested itself from time to time to the minds of chemists; but the real origin of the Institute appears to date from May 31st, 1872, when Professor Edward Frankland, who at that time was President of the Chemical Society, occupied the Chair at a dinner given in honour of Prof. Cannizzaro, on his appointment as Faraday Lecturer. In the course of his speech, the President drew attention to the increasing importance of chemistry in relation to the wants of communities, and pointed out how great would be the usefulness of an Institute which would be to chemists what the (Royal) Colleges of Physicians and Surgeons were to the medical profession, the Institution of Civil Engineers to civil engineers, and the Inns of Court to the legal profession.

In the same year proposals were advanced in the *Chemical News* for the formation of an Association of Manufacturing Chemists. This matter was taken up by the Tyne Social Chemical Society, but it was not until 1881 that the Society of Chemical Industry was established to undertake the objects in view.

FIRST
ORGANISATION
COMMITTEE.

In 1875, a meeting was held at the house of Frederick Manning, to discuss the advisability of founding an institution to promote the education and protect the interests of professional chemists. Those present were Michael Carteighe, Walter Noel Hartley, Frederick Manning, Charles Tookey, John Millar Thomson, and Charles Romley Alder Wright. The first Organisation Committee was appointed, consisting of Michael Carteighe, Dugald Campbell, Edward Frankland, Frederick Manning, Theophilus Redwood, Thomas Stevenson, Richard V. Tuson, Augustus Voelcker, J. A. Wanklyn, C. R. Alder Wright, with Walter Noel Hartley as Honorary Secretary *pro tem*.

The year 1876 was remarkable for the stir among chemists in the direction of organisation. The Legislature, by passing the Sale of Food and Drugs Act in 1875, had acknow-

ledged the applicability of analytical chemistry for the public benefit, and the public analysts appointed under the Act now formed themselves into a Society, mainly for the discussion and publication of papers relating to the detection and repression of adulteration in food and drugs. Among other chemical consultants, and chemists engaged in industries, there was a feeling that the time had come to make an attempt to form an organisation for establishing a qualification for practice and for raising the status of their calling. Professors and teachers supported the movement, for the reason that it embraced the promotion of the better education of chemists.

That there was need for such an organisation scarcely admits of question, having regard to the defective and unregulated conditions under which the practice of professional chemistry had hitherto been exercised and the ideas that prevailed as to the procedure of those engaged in it. Prosecutions under the Sale of Food and Drugs Act frequently failed owing to discrepancies and, in some cases, disclosed a lack of competency on the part of public analysts, which created a distrust of their work. The trades affected formed organisations for mutual defence, and the trade journals made much of any variance of opinion among scientific witnesses, even analysts of acknowledged repute being attacked. The necessity for a qualification for practice therefore became a subject of general discussion. The Society of Public Analysts became the authority for deciding methods of analysis to be adopted, and for determining the opinions to be drawn from results; differences in results became rarer and, with increasing facilities for scientific training, the general competency of public analysts was gradually raised to a very high standard. In later times, the examinations of the Institute have exercised a most important influence in effecting this result.

One of the most energetic workers for the promotion of organisation among chemists was Dr. Alder Wright, who contributed an article to the *Chemical News* of January 21st, 1876, "On the Necessity for Organisation among Chemists for the Purpose of Enhancing Their Professional Status." This is of interest not only in connection with the

DR. ALDER
WRIGHT'S
ARTICLE.

foundation of the Institute, but as indicating the condition of the profession of chemistry at that time. The following is a brief abstract of this article :—

In the absence of organisation, and without due recognition by the public of the existence of the profession of chemistry, the work of chemists was commonly shared by medical men, engineers and others, many of whom had little or no qualification for such practice. There was a general feeling that unless some steps were taken to ensure the proper training of professional chemists, their calling would be speedily reduced to a low standing in the public estimation ; few men of culture would follow it, and the progress of chemical science would be thereby retarded. Apart from the science teachers and *dilletanti* workers, chemists had in most cases to combine teaching with their consulting and investigational work. Chemical practitioners included comparatively few who had received any systematic training in universities, or who had served under articles in the laboratories of reputable professional chemists ; while there were many who as subordinate assistants to private practitioners or on works, or as "bottleshwashers" in College laboratories, had picked up a rough-and-ready knowledge of testing processes in use for the examination of a limited number of materials and products. There were also science teachers, who supplemented their salaries by undertaking professional chemical work, for which their experience and skill were often insufficient ; and medical men with only a modicum of chemical knowledge, often wholly innocent of any notion of the conduct of quantitative work, with perhaps a slight acquaintance with the methods adopted in the examination of a few articles of food and water. These *quasi*-chemists were unable to undertake any problem out of the common, and except where they referred it to better qualified men, would attempt it with fallacious results, which were only brought to light when checked by others more competent. The public, being unable to discriminate between the competent and the incompetent, would throw discredit on both, and on the profession generally. Such *quasi*-chemists, moreover, accepted absurdly low fees, with the consequence that the public often expected competent men to do the same. If the latter refused the work, they lost clients and income, while if they accepted it, the work had to be slurred over in some way—rough tests taking the place of accurate estimations requiring time and skill. In some cases, it was alleged that the results were simply the offspring of the analysts' imagination.

The rapid increase in the number of imperfectly skilled analytical and consulting chemists led to a meagre estimation of the value of their work, and to a want of trust in practitioners generally. When the Adulteration Act, and the Sale of Food and Drugs Act, 1875, were passed, the remuneration offered to public analysts was in many cases ridiculous, and at first not a few men were appointed who were quite unfit for these appointments.

Dr. Alder Wright therefore suggested the formation of an Association or Guild which should obtain a Charter for the purpose of granting licences to practise to duly qualified persons only, and thus afford a guarantee to the public of the efficiency of such licentiates, while non-licentiates should be debarred—possibly by special Act of Parliament—from



CHARLES ROMLEY ALDER WRIGHT, D.Sc., F.R.S.
Hon. Treasurer: 1877—1884.

recovering fees, and their certificates and evidence should be inadmissible in a court of law. He also suggested that for proved professional misconduct a licentiate's name should be removed by the Council from the roll of the association ; that official methods of analysis might be promulgated, and that minimum fees for analysis might be fixed. The tariff of fees would not be binding on experts whose reputation entitled them to charge higher fees for reference and special cases ; nor would it interfere with the practice of contracting for the chemical work of firms.

To carry out the scheme, Dr. Alder Wright suggested that a Committee of Selection should be appointed to draw up a list of professional chemists whose status or whose published investigations were considered sufficient to demonstrate their fitness for registration as qualified ; that other persons should be invited by advertisement to make formal application for such registration, subject to the approval of the Committee ; and that the Committee should frame a draft Charter and Bye-Laws for acceptance by the general body. Candidates who might not be accepted for immediate registration should be examined for the Licentiate'ship, practical quantitative work forming an essential part of such an examination. Dr. Alder Wright foresaw the possible introduction of the requirement of a Preliminary Examination in general culture, as well as of Primary and Final Professional Examinations, and concluded his article with suggestions as to the provision of income for the maintenance of the Association by examination fees and annual subscriptions.

On March 3rd, 1876, an editorial leader appeared in the *Chemical News* directing attention to the appointment by the Board of Trade of an engineer to the position of Water Examiner, and commenting also on the circumstance that engineers appeared to regard questions affecting sewage treatment as their concern solely. On the question of professional remuneration, it was shown that even men of distinction, either possessed of private means or deriving an income from a secure appointment, in which laboratories, apparatus and materials were provided, were prepared to accept low fees ; while it was suggested that the scale of remuneration allowed by manufacturing concerns of doubtful integrity, and the

THE
"CHEMICAL
NEWS."

continuance of the flow of work from them to the practitioner, depended to some extent on the favourable or unfavourable nature of his reports on their products. It was pointed out that considerable advantages would accrue to practitioners by their being united in a properly organised body capable of watching their interests and of dealing with matters of professional conduct. The practice of chemistry being thus placed in a more satisfactory position among the learned professions, the membership of such a body would become recognised as the hall-mark of competence, and chemical work would be less frequently entrusted to the incompetent.

CORRE-
SPONDENCE
IN THE
"CHEMICAL
NEWS."

Mr. Alfred H. Allen contributed a letter to the same issue, in which he suggested that the recently formed Society of Public Analysts should form the nucleus of the proposed organisation, though he admitted that many who then held appointments as public analysts were "unused to general analysis and would never desire or expect to be recognised as members of a guild of qualified analytical chemists." He gave instances of members of other professions and callings posing as chemists, and advanced a plea for the exemption of analytical chemists from jury service.*

In subsequent issues of the *Chemical News*, letters appeared from the following:—

Mr. Charles H. Piesse who suggested a "College of Chemistry" rather on the lines of the Royal College of Physicians and Surgeons.

Mr. C. H. Alldred, who alluded to "the wretched position to which professional chemists were drifting," and dealt more particularly with industrial chemists, indicating the low rate of remuneration they received, and the mechanical system under which the experience of the assistants was often limited to certain determinations.† He expressed his views on the nature and scope of examinations and conditions for membership; but suggested that, considering the wide range of chemistry, it would be unfair to examine a candidate in both inorganic and organic work, and that the diploma to be granted should specify the branch in which he had passed. He hoped that the guild would include works chemists as well as "Commercial Analysts" in

* This matter has since received some consideration from the Council of the Institute, though their decision has not been altogether in sympathy with Mr. Allen's point of view. The Government authorities who were consulted held the opinion that already too large a proportion of professional men are exempt from such service.

† This system is still much in vogue in some industries.

private practice, and expressed general concurrence with Dr. Alder Wright's original article.

Mr. E. W. T. Jones, who wrote to the effect that the proposed organisation was absolutely necessary to enable competent chemists to produce evidence of qualification to practice.

"Theta," who opposed the view that candidates should be examined in one branch only. The very poor remuneration paid to chemists in works was largely due to the fact that so few men studied and qualified themselves properly for the work. He had good reason to believe that the Chemical Society was taking steps to distinguish between those who were properly qualified and those who were not.

"P. H.," who suggested that the profession was adopted by some for the reason that it was "the only profession exempt from examination." He considered Dr. Alder Wright's scheme excellent.

"A Public Analyst," who expressed the hope that in the event of compulsory registration the rights of existing practitioners would be respected, supported Mr. Allen's suggestion that the Society of Public Analysts should form the nucleus of the organisation.

"G. S. P.," who, while agreeing to the necessity for organisation, endorsed Mr. Alldred's opinions as to the inclusion of competent industrial chemists and attempted to excuse discrepancies in the results of various analysts on the ground that the chemist was often screwed down to low fees. He advocated the formation of an entirely new Society for the object in view.

"A. R. S. M.," who suggested that the Royal College of Chemistry, being already established and supported by the Government, should undertake the organisation of the profession; that it might reasonably be expected to exercise its responsibilities impartially, while it wanted nothing but the addition of a few more professors to form an examining Board for conducting the qualification tests.

An anonymous correspondent held the opinion that the new Institute should not examine, but should register candidates who had taken a prescribed course, and had passed the examinations in one or more universities or colleges to be approved by the Council of the Organisation.

Prof. Edward Frankland suggested to the Council of the Chemical Society that a class of Fellows to be styled "Licentiates of the Chemical Society" (or some analogous title), to include only competent practising professional chemists, should be created, in order to draw a distinction between such chemists and Fellows who were merely interested in chemistry as a science and not as a profession. The proposition, however, did not receive much support and was not adopted.

A circular, calling a meeting for Thursday, April 27th, 1876, was forwarded by the Organisation Committee to 124 well-known chemists, of whom forty-six attended, viz. :—

F. A. Abel, H. E. Armstrong, J. Attfield, H. C. Bartlett, G. Bischof, J. Campbell Brown, M. Carteighe, A. H. Church, W. H. Corfield, W. H. Deering, A. Dupré, E. Frankland, R. J. Friswell, J. H. Gilbert, J. G.

ORGANISATION
PROCEEDINGS.

Gordon, J. Hall Gladstone, B. J. Grosjean, C. E. Groves, H. W. Hake, W. E. Halse, A. Vernon Harcourt, W. N. Hartley, C. W. Heaton, David Howard, E. Kinch, C. T. Kingzett, F. Maxwell Lyte, F. A. Manning, E. Neison, John A. E. Newlands, W. Odling, C. H. Piesse, W. Ramsay, W. J. Russell, E. F. Teschemacher, J. Millar Thomson, W. Thorp, L. Thudichum, A. Tribe, R. V. Tuson, J. G. Versman, G. W. Wigner, J. Williams, Mattieu Williams, W. Wilson, and C. R. Alder Wright.

At this meeting—at which Prof. F. A. Abel occupied the Chair—the following resolutions were passed :—

(1) That it is desirable that an organisation of professional chemists be formed.

(2) That in order to effect this organisation it is desirable that an electoral body be formed for the purpose of selecting as members of the organisation such persons as may be found to be competent chemists.

(3) An amendment to omit the word “electoral” was carried.

(4) That a committee be appointed for the purpose of conferring with the Council of the Chemical Society with the view of ascertaining how far that Society may be able and willing to carry out a scheme for the organisation of professional chemists, and that this committee be requested to report to the adjourned meeting. This was carried unanimously.

(5) That this committee should consist of ten persons and a Secretary to be nominated by this meeting, and six of the committee to form a quorum. Carried unanimously.

The following ten members were nominated and duly appointed members of this committee :—

SECOND
ORGANISA-
TION
COMMITTEE.

Prof. Frankland, Messrs. Dugald Campbell, Michael Carteighe, F. A. Manning, Dr. T. Boverton Redwood, Dr. T. Stevenson, Prof. Tuson, Dr. Voelcker, Mr. J. A. Wanklyn, and Dr. C. R. Alder Wright. Mr. W. N. Hartley was appointed Secretary to the Committee. Six members to form a quorum.

At the first meeting of the Committee, held on May 5th, 1876, the following scheme was proposed by Mr. Michael Carteighe and adopted for consideration by the Council of the Chemical Society :—

(1) “That the provisional title of the new association be the ‘Institute of Professional Chemists’ (of Great Britain and Ireland).”

(2) “That there be one class of individuals composing it, namely, Members.”

(3) “That a Board of twenty-one Examiners be constituted as hereafter noted.”

(4) “This Board to admit, or decline to admit, candidates who may apply for admission to the Institute, and to have control over its funds.”

(5) “The Board to consist of the following *ex officio* members :—

“The President of the Chemical Society for the time being to be President of the Institute and Chairman of the Board. One Vice-President of the Chemical Society to be a Vice-President of the Institute and Vice-Chairman of the Board. Of the other members of the Board, four were to be appointed annually by the Council of the Chemical Society and sixteen others by a Committee of the Institute, eight to form a quorum. The Board to meet monthly.”

"Every candidate for admission to the Institute would have to produce evidence of training during three years in chemistry and physics under recognised teachers, and subsequently to have been engaged as an assistant to a Member of the Institute, or as Chemist in a Chemical Factory; also to have published an original research of sufficient merit in the opinion of the Board."

In May, 1876, a Committee was appointed to confer with the Council of the Chemical Society on a "scheme for the organisation of Practising Chemists." The matter was most carefully considered by the Council of the Society, but, after taking counsel's opinion, they came to the conclusion that there were insuperable difficulties in carrying out the proposed scheme and that a separate organisation was desirable.

SUGGESTED
ORGANISA-
TION BY THE
CHEMICAL
SOCIETY.

In the same month, an additional series of letters appeared in the *Chemical News* dealing with the method of admission to the Chemical Society, membership of which was still decided by ballot without regard to the possession by the candidates of any strictly chemical qualification, though it was required that they should be recommended from personal knowledge by a number of existing Fellows. The roll of the Chemical Society included, therefore (as it still does), many amateurs or purely philosophical students in Chemistry, who were not necessarily practising or teaching the science; yet it was felt that not a few sought admission merely to support their claims to scientific attainment in the estimation of the public. A section of the Fellows who were desirous of maintaining the prestige of the Society as a representative association of chemists refused to vote for the election of any Candidate who could not show unmistakable evidence of scientific attainments, in order that the initials "F.C.S." might in time become an indication of professional qualification and the Society constituted the guardian of professional interests.

The situation was summed up in a letter in the *Chemical News* from Mr. W. N. Hartley, who arrived at the following conclusions:—

"(1) That the public regard the Fellowship of the Chemical Society as a sort of degree or stamp of considerable knowledge and skill in the science of chemistry.

"(2) That the Society consists, mainly at least, of two classes of Fellows, *dilettanti* and workers.

"(3) That there being no distinction between the two, inconveniences arise therefrom.

"(4) That the course of study for a chemist should be strictly defined."

The Chemical Society had not been founded for the purpose of conferring qualifications, but for the promotion "of Chemistry and those branches of science immediately connected with it," or, as provided in its Royal Charter, "for the general advancement of Chemical Science." The continued increase of membership was vital to the progress of the Society, in view of its need for funds to meet the cost of its publications.

In an article published in *Nature* (June 8th, 1876)—"On the Organisation of the Profession of Chemistry"—it was stated that there was a general impression that chemistry was not then regarded as a profession, and the opinion was enunciated that in proportion as a knowledge of the science opened a career, and became recognised as the basis of a profession, a twofold gain would accrue; the character and attainments and number of those engaged in educational or practical chemistry would be raised, and the quality and number of the contributions made to scientific chemistry would rise. It was stated, further, that there was a considerable and an increasing demand for young men having a knowledge of chemistry, as teachers, as laboratory assistants, as analysts or experimentalists in chemical and other works; but, partly because the importance of chemistry had not long been recognised, partly perhaps for want of organisation, chemistry did not constitute a definite vocation which a young man of the professional classes might choose with the same confidence as medicine or law.

A letter was contributed to the *Chemical News* of June 9th, 1876, by Mr. John Pettengill, the Solicitor employed by the Organisation Committee dealing in some detail with the scheme for the establishment of an "Institute of Professional Chemists," the suggested objects being:—

"(1) The general advancement of Technical Chemistry in its application to the Arts, Manufacture, Agriculture, and Public Health.

"(2) To ensure that persons adopting the profession of Consulting

Chemists or Analytical Chemists for reward are qualified by study and training for the proper and competent discharge of the duties they undertake."

A brief outline of the conditions of membership followed, with provisions for the incorporation of the Institute and the management of its affairs, but these were subsequently modified in many respects. It may be noted, as a matter of interest, that the Organisation Committee proposed that Fellowship of the Chemical Society should be one of the conditions of membership of the Institute, and that the Council of that Society should be empowered to nominate five Members of the Council of the Institute. These proposals, however, were not adopted.

Mr. W. N. Hartley contributed a further letter to *Nature* (June 22nd, 1876), in which he stated that the Chemical Society never had promoted the acquisition of such knowledge and skill as were necessary for the discharge of such duties as a professional chemist was required to undertake. If the Chemical Society had performed all other functions, that fact was no argument against it appointing a Board of Examiners, or of conferring some distinction on those who were capable of acting in the service of the public as chemists; indeed, if this might conduce to the "general advancement of chemical science," the Society, by not taking such steps, was scarcely fulfilling the duties for which it was originally founded, and by opposing any such scheme it might actually retard the progress of chemistry in this country. It would be very difficult to make any examination answer the purpose of testing a man's skill and technical, as well as scientific, knowledge in a satisfactory manner. An organisation scheme had been designed to obviate examination as far as possible, or, in other words, to extend the examination over a period of six years. Those who were teachers in medical schools, and particularly those who at times had to take to "coaching" for a livelihood, saw the defects of a system which entirely depended upon examination as a test of qualification. Certainly no existing university examination would have the confidence of professional chemists. There were many business details besides granting certificates of competency which an organisa-

tion of chemists would be obliged to undertake, as, for instance, imposing such observances on the members as would tend to suppress objectionable practices which were somewhat too common at that time.

Dr. Alder Wright contributed to the *Chemical News* of June 30th, 1876, a further letter entitled "The Relations between the Chemical Society and the Organisation Movement," giving the arguments for and against the organisation being undertaken by the Chemical Society or any other body, and expressing his opinion that the new Institute should be an entirely independent body. He does not appear to have realised the influence which the Institute would have on the progress of scientific education and research. He seems rather to have advocated its foundation for "business" and somewhat restrictive purposes, leaving the advancement of the science to the Chemical Society, entry to which he would still have left open to anyone interested in chemical science, not necessarily for professional purposes. How far his ideas have been realised will be seen in this record; but in one important particular a difference will be observed, viz.: whereas his scheme aimed at the restriction of practice to those who had passed certain examinations and to the exclusion of all others who might consider themselves chemists, the policy of the Council of the Institute has been to aim at a high standard of training and examinations, whereby has been secured a body of men of undoubted competence who have acquired the principal professional chemical work and command the confidence of the public. The Council, however, have not sought any powers to restrict practice solely to members of the Institute.

With the increase in the number of colleges and technical schools providing instruction in science for various grades of students, scope has been found for those who are competent only to undertake routine testing in works and private laboratories as well as for those who are equipped for the control of operations in industry or to conduct professional practice as public consultants and analysts. Compulsory registration of professional chemists would appear to be reasonable only in the last mentioned category, and it presents

a problem which may have to be faced when the Institute has attained greater numbers and greater resources. (See p. 140.)

The proposal—in the scheme advanced by the Organisation Committee—that all persons who had been in practice on their own account in the profession of analytical and consulting chemistry for a period of five years should be eligible for election to the new Institute without producing evidence of training, led to further discussion in the *Chemical News* during the latter half of 1876. Some correspondents advocated the admission of *all* engaged in chemistry at that time; others objected that many who called themselves analysts and consulting chemists had no qualification to act as such, while others complained that the scheme did not provide for the inclusion of works' chemists.

The Organisation Committee then decided that each nomination for membership should be supported by five members and that the votes of four-fifths of the Council of the proposed Institute should be required for a valid election. With regard to works' chemists, it was agreed that those who could show that they had been satisfactorily trained, and had been engaged in the practice of their profession for at least five years should be placed on the same footing as private practitioners.

At a meeting held on November 4th, 1876, at the Chemical Society's Rooms—Prof. Abel in the Chair—it was reported that the Council of the Chemical Society had been advised that the Society, as then constituted, could not add to its name or sanction the creation of an Institute as an adjunct to the Society. It was thereupon proposed by Mr. J. A. Wanklyn and seconded by Prof. Redwood :—

“ That the cordial thanks of the meeting be tendered to the President and Council of the Chemical Society for the consideration given by them to the proposals of the Organisation Committee, and for the efforts made by them to meet the views of the Committee in relation to these proposals.” This was carried unanimously.

It was further proposed by Prof. Frankland, seconded by Dr. Augustus Voelcker, and supported by Dr. Williamson :—

“ That, having regard to the limited powers of the Chemical Society under its Charter, it is desirable that an Association be formed that

shall be independent of the Chemical Society, and that the Organisation Committee already formed be dissolved, and that the following gentlemen, or such of them as may be willing to act, form a new Committee (with power to add to their number) to settle the form and details of the scheme, and to take all steps necessary to secure the formation and incorporation of the proposed new Association." (Carried unanimously.)

The Committee consisted of the following :—

THIRD
ORGANISATION
COMMITTEE.

"Prof. Abel; Mr. A. H. Allen (Sheffield); Dr. H. E. Armstrong; Prof. Attfield; Mr. James Bell; Mr. I. Lowthian Bell (Middlesbrough); Prof. Bloxam; Prof. Crum Brown (Edinburgh); Mr. M. Carteighe; Mr. Dugald Campbell; Mr. W. Crookes; Mr. G. E. Davis (Runcorn); Dr. Dupré; Prof. James Dewar (Cambridge); Mr. F. Field; Mr. R. J. Friswell; Prof. Frankland; Prof. Gladstone; Mr. George Gore (Birmingham); Prof. Galloway (Dublin); Mr. C. E. Groves; Mr. W. N. Hartley; Mr. C. W. Heaton; Mr. Douglas Hermann (St. Helens); Mr. David Howard; Mr. C. T. Kingzett; Prof. Marreco (Newcastle); Mr. F. A. Manning; Dr. E. J. Mills; Dr. Hugo Müller; Mr. E. Neison; Prof. Odling (Oxford); Mr. F. J. M. Page; Mr. J. Pattinson (Newcastle); Dr. B. H. Paul; Mr. W. H. Perkin; Mr. C. H. Piesse; Prof. Redwood; Prof. Emerson Reynolds (Dublin); Dr. W. J. Russell; Dr. R. Angus Smith (Manchester); Dr. H. Sprengel; Dr. Stevenson; Mr. R. R. Tatlock (Glasgow); Mr. E. T. Teschemacher; Prof. R. V. Tuson; Dr. Voelcker; Mr. J. A. Wanklyn; Prof. Williamson; Mr. J. T. Way; Dr. C. R. Alder Wright."

A number of Fellows of the Chemical Society complained subsequently that the Society as a whole had not been consulted on the matter. Among these, Captain Marshall Hall claimed that about 1865 he had proposed that the Chemical Society should undertake the duties of an examining body to test the competency of those desiring to practice professional chemistry, and that there appeared no reason to suppose that its powers could not be extended by making representations to the Crown in the matter.

The Organisation Committee certainly overlooked some well-known chemists, but the matter was so widely discussed in scientific journals that there was little reason for complaint, and any chemist could easily have got in touch with the Founders had he so wished.

SUGGESTED
ORGANISATION
BY THE
SOCIETY OF
PUBLIC
ANALYSTS.

Early in 1877, *The Analyst*, which was edited by Mr. G. W. Wigner and Dr. J. Muter—(not then the official organ of the Society of Public Analysts, although it reported the proceedings of that Society)—had invited public analysts as "the real backbone and sinew of the analytical profession," to make use of its columns for the expression of their views on

the question of organisation. Letters, editorial articles and notes of criticism followed for the greater part of the year, mainly directed at the private nature of the proceedings of the Organisation Committee. It was argued by some who considered themselves aggrieved by the action of the Committee, that the latter, instead of calling a meeting consisting only of chemists known to themselves should have advertised a public meeting of consulting and analytical chemists to discuss the matter, at which a new Committee should have been appointed to decide the list of Original Members; that membership should have been restricted to men "who earned an income . . . by the practice of professional chemistry as distinct from Pharmacy," and that all coming within this category in practice at the time should have been enrolled forthwith.

It was quite necessary to differentiate between the two kinds of chemists; but it may be mentioned, in explanation, that some of these criticisms tending to cast a slur on pharmacy were probably levelled at Mr. Michael Carteighe, one of the immediate founders, who, although trained at, and for some time demonstrator in chemistry at, University College, London, as well as in the School of the Pharmaceutical Society, was engaged in pharmacy and in industrial chemistry. It will be seen later that his connection with the foundation of the Institute and his continued interest in its affairs became of considerable importance when, as President of the Pharmaceutical Society, he was one of the signatories to the Petition for the Royal Charter of the Institute, and bore witness to the fact that the opposition of that Society, if any such had existed, had been entirely withdrawn. Those who objected to the enrolment of pharmaceutical chemists who were without trained scientific chemists, could hardly have recollected that many of the greatest modern chemists had started life in the craft of pharmacy. Davy in his youth served an apprenticeship with an apothecary in an obscure village in Cornwall; Liebig and Dumas were apothecaries before they went to Gay-Lussac and Thénard respectively; and many other men of distinction were pharmaceutical chemists before they turned their attention to the higher branches of pure and applied chemistry.

On March 29th, 1877, Prof. Abel, in his Presidential address to the Chemical Society, gave an account of the negotiations between the Council of the Society and the Organisation Committee, and referred to the development of "The Institute of Professional Chemists."

PROCEED-
INGS PRIOR
TO INCOR-
PORATION.

The account of the proceedings during 1877, leading to the actual foundation of the Institute, has been taken chiefly from the Address of Prof. Edward Frankland, delivered at the First Annual General Meeting which was held on February 1st, 1878, and it will be noted that although the Institute did not interfere with existing interests, it met with considerable opposition and many difficulties.

TITLE OF
THE INSTI-
TUTE.

The Memorandum and Articles of Association were drawn up, and application for incorporation was made to the Board of Trade for registration as "The Institute of Professional Chemists." From correspondence which ensued with the Board, the promoters of the Institute learned that *in the eye of the law*, as it then stood, they were not recognised as "chemists," professional or otherwise.

It appeared that on receiving the application for incorporation, the Board of Trade communicated with the Privy Council, who, in turn, asked the advice of the Pharmaceutical Society. It was stated that the Council of that Society urged as an objection to the new scheme that they had appointed a Board of Examiners, that those who had passed the major examination of the Society were registered as *Pharmaceutical Chemists*, and those who had passed the minor examination were registered as *Chemists and Druggists*. The Privy Council, therefore, contended that a sufficient guarantee was already afforded to the public, or the courts of law, of the competency of persons called as experts in chemical science, and that means already existed by which persons having recourse to a chemist could prove his training and fitness for the skilful performance of the work he undertook. The Privy Council also objected to the term "Professional Chemists," urging that all persons who had studied and might practise the science of chemistry, whether as applied to pharmacy, agriculture, or any other special object, might claim to be "Professional Chemists." The Board of Trade, therefore,

wrote to the promoters of the Institute, requiring them to modify their scheme to meet the objections of the Pharmaceutical Society.* The promoters accordingly changed "Professional Chemists" to "Chemistry," in the title of the proposed Institute, and resolved to insert the following words in the Memorandum of Association: "That no Fellow or Associate be entitled to a certificate of his Fellowship or Associateship." The opposition of the Pharmaceutical Society was then formally withdrawn, but the Board of Trade afterwards requested that the following sub-section, describing one of the objects of Association, should be struck out: "To ensure that Consulting Chemists and Analytical Chemists are qualified by study and training for the proper discharge of the duties they undertake." On being asked to state the grounds upon which the omission of the paragraph was asked for, the following letter was sent by the Board of Trade to Mr. J. Pettengill, who was acting as Solicitor for the Institute:—

" BOARD OF TRADE
 " (RAILWAY DEPARTMENT),
 " LONDON, S.W.,
 " 2nd July, 1877.

"SIR,—With reference to your interview with me this afternoon, relative to the omission of sub-section 6, of section 3 of the Draft Memorandum of Association of the proposed Institute of Chemistry, I am directed by the Board of Trade to inform you that, in accordance with your wish, I have communicated with Counsel on the subject. I am now to inform you that the sub-section was struck out on two grounds:—

- "(1) Because it appeared to point to the granting of certificates and nothing else.
- "(2) Because it appeared to cast a doubt on the fitness of the Pharmaceutical Society to perform their duties, inasmuch as it is the duty of the Pharmaceutical Society to see that consulting chemists are fully qualified, and the fitness of the Society to perform that duty has been recognised by the State, and this being so further security for the qualifications of chemists does not appear to be needed.

"As regards the fear which you expressed that the omission of the

* It is interesting to note in view of subsequent events, that *The Pharmaceutical Journal*, the official publication of the Pharmaceutical Society, contained a leader (September 15th, 1877), entitled "Organisation of Professional Chemists," dealing with the foundation of the Institute. It will be observed also that the title "Institute of Professional Chemists" had been adopted in the proposal submitted by Mr. Michael Carteighe at the meeting of the Organisation Committee held on May 5th, 1876 (see p. 32).

TITLE OF
THE INSTI-
TUTE.

sub-section might be fatal to the promotion of the Institute, I am to add that it appears to this Department to be at least doubtful whether the words ' to ensure that consulting chemists and analytical chemists are duly qualified ' are required for anything (other than the grant of certificates) which the promoters cannot do under the remaining part of the Memorandum. I am, Sir,

" Your obedient servant,

" HENRY E. CALCRAFT.

" J. Pettengill, Esq.,
" 32, Walbrook, E.C."

It was of no avail to explain to the Board of Trade that membership of the Institute of Chemistry would confer no right to keep a druggist's shop, or to interfere with trade in any way, and that the titles " Chemist and Druggist " and " Pharmaceutical Chemist " had always been exclusively applied to persons keeping shops for the sale of drugs and the dispensing of poisons ; whereas the terms " Chemist," " Analytical Chemist," and " Professional Chemist," had always been applied to persons specially trained in the science of chemistry. In adhering to their views on this matter the officials of the Board of Trade no doubt took their stand upon the provisions of the Pharmacy Act, 1868, which declared that no one but a chemist as defined in the Act should (under penalty of £5 for each offence) describe himself as such, unless he were duly registered as a *Chemist and Druggist* or a *Pharmaceutical Chemist*. The President of the Chemical Society, for instance, could not, in strict law, use the designation by which he was known all over the civilised world without thus infringing the laws of his country. While, through the instrumentality of its laboratory and its examinations in general education, the Pharmaceutical Society had greatly raised the status of the druggist, and had conferred dignity upon an important occupation, which before the incorporation of the Society had too often been carried on by grocers, oilmen, and others entirely ignorant of the properties of drugs, it was felt that the Society overstepped the limits of strict justice when, in 1868, it laid exclusive claim to a title which was the common property of all who cultivated the science of chemistry.

After receiving the letter quoted above, the promoters of the Institute had to choose either the acceptance of the conditions of registration imposed by the Board of Trade,

or the establishment of the Institute as a private society. They decided upon the former alternative, and agreed to the removal of the sub-section, provided that the following sub-section were made to read as follows: "To adopt such measures as may be necessary for the advancement of the profession of Chemistry, and particularly for the maintenance of the profession of the Consulting and Analytical Chemist on a sound and satisfactory basis."

This amendment was accepted by the Board of Trade, the Council of the Institute being empowered to appoint and remunerate Examiners, and to insist upon a high standard of qualification for admission to Associateship and Fellowship; such, for instance, as a sufficient preliminary general education and special training; the passing of satisfactory examinations in general chemistry—in the practical qualitative and quantitative analysis of minerals, organic compounds and bases—in physics, and in mathematics; and by requiring a three years' course of study and practical work in applied chemistry.

These qualifications would serve to distinguish Fellowship of the Institute from Fellowship or membership of any other body in this country. Medical degrees required only a limited knowledge of theoretical chemistry, affording no testimony to the competency of the possessor to perform more than the very simplest operations of practical chemistry, and constituted no guarantee that even an examinee in honours possessed the knowledge which was absolutely necessary for the efficient practice of professional chemistry; and the major examination of the Pharmaceutical Society, so far from justifying the opinion of the Board of Trade, that "further security for the qualification of chemists does not appear to be needed," involved—at that time—only an elementary knowledge of physics and arithmetic, and prescribed only the following practical knowledge of chemistry: "The nature and properties of the elements and their compounds, both inorganic and organic, especially those used in medicine or the arts; also the qualitative analysis of the more important chemicals, such as nitrates, chlorides, carbonates, sulphates, oxalates, tartrates, etc., and the detection of impurities in them; and the volumetric estimation of the strength of all Pharmacopœia preparations in which standard solutions are ordered to be

used." The major examination, therefore, thus stopped short of any kind of gravimetric quantitative analysis, and tested only the elements of that knowledge which the Institute proposed to require of its candidates. It was obviously deficient for the purpose of testing the qualifications of chemists who undertook the duties of public analyst, or who gave advice on the applications of chemistry to the arts, agriculture, and public health, or who undertook investigations in connection with the applications of chemistry to technical industry.

The President in the conclusion of his Address paid a high tribute to Mr.—later Sir—Walter Noel Hartley, to whom the Council had accorded their best thanks for the efficient manner in which he had discharged the heavy duties of Honorary Secretary up to the date of the incorporation.

The foregoing pages may be said to embrace the history of the foundation of the Institute.

Though the list of Original Fellows contained the names of many chemists of distinction, the Institute was mainly created by the younger chemists of the time. They believed that an association of duly qualified professional chemists would be for their common weal; that raising the standard of the efficiency and conduct of such chemists would tend to the better service of the public, and would secure for the chemists themselves due recognition by Government and other Authorities and the public, as well as by leaders of industry and by other professions.

From some points of view it may be regretted that the chemical interests of the nation were not concentrated in one organisation; but it is unlikely that such a body would have been able to control the many varied interests of those who are directly concerned with the science of chemistry with results such as have been achieved by several bodies working separately though in friendly co-operation with one another. The Institute of Chemistry no less than the other chemical societies has found a wide field for useful work, both in the interests of the public and the profession.

To have been obliged to relinquish the term "Professional Chemists" in the name of the Institute was a great disappointment to the Organisation Committee, particularly as they felt that the title of "chemist" had been usurped by the pharmaceutical chemists, whose own title, as compounders of drugs, had been adopted in earlier times by the Society of Apothecaries. In any case, the Institute found itself faced with the task of educating the public to realise the circumstance that there was more than one kind of "chemist," a fact which even now is but too little recognised.

That this confusion of ideas was one of old standing is shown by the remarks of Dr. George Berkenhout, in his "Theory and Practice of Philosophical Chemistry," published in London, in 1788, in the preface of which may be found the following lines :—

"Persons, who know nothing more of Chemistry than the name, naturally suppose it to be a trade exercised by the shopkeepers, called *Druggists* and *Chemists*, who are thought to be chiefly employed in preparing medicines for the use of apothecaries; Chemistry, therefore, they imagine, belongs exclusively to physic: but if, excited by curiosity, they become better acquainted with this bewitching science, they will soon discover its intimate connection with every other branch of human knowledge; and that the arts and manufactures so peculiarly conducive to the prosperity of nations, constantly look up to Chemistry in their progress towards perfection. In this point of view, it claims the support of ministerial power in all countries."

It was not intended that the new Institute, representing consulting, analytical and technological chemists and teachers of chemistry, should in any way interfere with the work of the Pharmaceutical Society of Great Britain, representing "chemists and druggists" and "pharmaceutical chemists."

The evident want of knowledge on the part of high officials with regard to the existence of more than one class of chemists clearly exemplified the ignorance of the general community, from which a partial awakening has come only through the strenuous commercial competition of later times.

A discussion was raised on the prior right to the term "chemist"—apart from the legal right acquired by the Pharmaceutical Society under the Pharmacy Act, 1868. Prof. John Attfield, writing to the *Chemical News* in March, 1878, stated that, though it might have appeared that the Pharmaceutical Society was antagonistic to the foundation of

THE TITLE
"CHEMIST."

the Institute, such was not the case. Occupying the position of Professor of Practical Chemistry in the School of the Society, he was able to confirm the opinion that such action as had been taken was due rather to the initiative of the Privy Council, to protect the legal interests of the Society, than to any feeling of opposition on the part of pharmaceutical chemists. It was improbable that the promoters of the Institute would knowingly admit to its membership any person likely to pose fraudulently as a pharmaceutical chemist ; and though the enrolment of all who called themselves professional chemists at the foundation of the Institute, as had been proposed, would not have safeguarded the promoters from such a possibility, such a person could not escape the application of the provisions of the Pharmacy Act. In the interests of pharmaceutical chemists and druggists, a definite qualification for those who intended to apply for appointments as public analysts was obviously a desideratum, since at the passing of the Sale of Food and Drugs Act, 1875, there had been considerable outcry against prosecution on the basis of erroneous results or a lack of knowledge of the practices of the pharmaceutical craft.

Prof. Attfield said that, prior to 1868, any petty huckster could, and often did, style himself "chemist" or "druggist." He endeavoured to show that the claim of the craft to the title "chemist" had grown up long since the time when the druggist was the only chemist and the only man then having good claim to be specially termed "chemist" ; for when, in the seventeenth century, artificial mineral, or inorganic, substances came to be used as medicines, their preparation, quite beyond the power of the collector or herbalist, or the seller of drugs—the grocer and drug-grocer, hence, afterwards, druggist—grew to be the province of men who (with some physicians) were the connecting links between the alchemy of the fifteenth century and the chemistry of the nineteenth century. Giving up the search for the elixir of life and the philosopher's stone, they had become as a class in the eye of the public the chemists and the only chemists. The "grocer" and "druggist" gradually dissociated ; the druggist and the chemist, working for a common end, associated, and hence arose the "chemist and druggist." He argued, therefore

that the "chemist and druggist" might complain that his name should be taken from him by men already bearing the far richer designations of chemical philosopher and chemical analyst, especially after he had provided—through the Pharmaceutical Society—that everyone of his class should know something of chemical philosophy and chemical analysis. Of the two classes of chemists, the "chemist and druggist" was able to say that he reckoned his age by hundreds of years, while his namesake, better chemist though he might be, only reckoned his by tens—for, though some of the substances termed chemicals had been known for centuries, chemistry as a science was not then a hundred years old. It might be regretted that followers of chemistry were not exclusively called "chemists" and followers of pharmacy "pharmacists"; but the Institute had to face matters as they then stood, and confusions of that kind generally cleared themselves away in course of time.

This point of view shows Prof. Attfield to-day in the light of a true prophet, inasmuch as the Pharmaceutical Society only claims to restrain the keeping of open shop for the retail sale and dispensing of poisons by other than registered "pharmaceutical chemists" and "chemists and druggists," and does not otherwise restrain the use of the title "professional chemist," unless the user is associated with a shop.

In continuation of his argument that the "chemist and druggist" had the prior claim to the title "chemist," Prof. Attfield contributed, shortly after, a further letter to the *Chemical News*, in which he quoted abstracts from early writers on the development of pharmaceutical chemistry since the time of Paracelsus (1493—1541), who declared: "The true use of chemistry is not to make gold but to prepare medicines."

If Prof. Attfield had ventured to carry his argument back to the earliest known epochs of the history of chemistry, he would have been bound to admit that in the Ancient Period the applications of the science by the Egyptians and Greeks were mainly concerned with the arts and manufactures; that the Alchemical Period was devoted to three chief aims: the search for the alkahest or universal solvent, the transmutation of metals, and, lastly, the elixir of life. The search for the

THE TITLE
"CHEMIST"

elixir was not vigorously pursued until the sixteenth century. It would appear, therefore, that the alchemists, or spagyrist, correspond more to the analytical and technological chemists of to-day, while the iatro-chemists—chemists who were also physicians—were the early representatives of the craft of pharmacy. The early English apothecaries, besides selling drugs, appear to have conducted a considerable amount of medical practice, until 1511, when the members of the College of Physicians of London were given the exclusive right to practise in London and for seven miles round. The physicians and apothecaries continued to wrangle for a period of fifty years and the latter strengthened their position by remaining at their posts during the Great Plague, when most of the physicians fled from the city. Eventually the apothecaries were successful in securing the right to practise medicine; they then dissociated themselves from the grocers, but continued to trade in drugs. Later, the trend of thought was increasingly turned to the closer examination of the constitution and properties of matter until the eighteenth century, the earlier part of which marked the Phlogiston Period, which came to a close with the discovery of oxygen by Priestley and Scheele, and the publication of Lavoisier's theory of combustion (1777). These events are regarded as the beginnings of Modern Chemistry, under which substances which could not be sub-divided were described as Elements, and were regarded as incapable of transmutation; so that the course of investigation was diverted still further from the ideals of the alchemists. Then followed the work of Dalton, and the development of his Atomic Theory, and, later, Newlands' periodic classification of the elements. The science of chemistry became generally defined as the study of the constitution of substances and of the laws relating to the combination of matter. Pharmaceutical chemists could hardly maintain that the practice of their craft coincided with the practice of this science; nor could they establish a prior claim to the title "chemist" except under the Pharmacy Acts of 1852 and 1868, which rendered it unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding poisons, or to use the title "chemist and druggist," or "chemist," or "druggist," or "pharmacist," or

"dispensing chemist or druggist" in any part of Great Britain, unless such person were a pharmaceutical chemist, or chemist and druggist, within the meaning of the Act, and registered under the Act, and conforming to such regulations as to the keeping, dispensing and selling of such poisons as may from time to time be prescribed by the Pharmaceutical Society with the consent of the Privy Council. In addition to the above, the title "pharmaceutist" was also protected under section 15, but the titles "professional chemist," "analytical chemist," "consulting chemist," "technological chemist," and "manufacturing chemist" were not mentioned.* The Act of 1868 (section 16), provided that there should be no interference with the supply of poisons in the ordinary course of wholesale dealing. Under section 3, chemists and druggists within the meaning of the Act consisted of persons who carried on the business of a chemist or druggist in keeping open shop for the compounding of prescriptions, etc. Under the Pharmacy Act of 1908, however, a body corporate may use the description chemist and druggist, or of chemist, or of druggist, or of dispensing chemist or druggist, provided its business, so far as it relates to the keeping, retailing and dispensing of poisons, is under the control and management of a duly registered pharmaceutical chemist or chemist and druggist.

* Though the liability to prosecution depends mainly on the question of keeping open shop and selling poisons, the following cases in which the Pharmaceutical Society has taken action are worthy of notice:—

In the *Society v. Wright* (1882), the use of the title "Shipping Druggists" by an unqualified person and a qualified person in association is an offence by the former. Queen's Bench. *Pharm Jour.*, Vol. XII. (3), p. 835.

In the *Society v. Turnbull* (1895), and the *Society v. Hume*, use of title "Chemist" is an offence in Scotland, even when such title is associated with modifying words. High Court of Justiciary. *Pharm. Jour.*, Vol. I. (4), p. 396.

EDWARD FRANKLAND: PRESIDENT, 1877—1880.

INCORPORATION UNDER
THE COMPANIES ACT,
1867.

On October 2nd, 1877, the Institute of Chemistry of Great Britain and Ireland became incorporated by licence of the Board of Trade, under the provisions of section 23 of the Companies Act, 1867.

Prof. Edward Frankland was elected the first President; Dr. Charles Romley Alder Wright, the first Treasurer; and Mr. Walter Noel Hartley, Honorary Secretary *pro tem*.

At the time of the foundation of the Institute, Prof. Edward Frankland held the Chair in the Royal School of Mines, having succeeded Hofmann in 1865. He had previously held professorships at Owens College (now the Victoria University), Manchester, 1851—1857; at St. Bartholomew's Hospital, London (1857—1863), and in the Royal Institution of Great Britain (1863—1868); and had been President of the Chemical Society (1871—1872). He was intimately associated with the early work of organisation, and may be considered, as already recorded, to have been practically the Founder. It was largely due to his personal influence that the majority of chemists of repute at that time were attracted to the Institute, and under his guidance its main objects were determined and set into motion.

The signatures of the original subscribers occur in the following order —

- E. Frankland, Professor of Chemistry at the Royal School of Mines.
- F. A. Abel, Chemist to the War Department.
- R. Angus Smith, Manchester, Government (Chief) Inspector of Alkali Works.
- J. H. Gladstone, President of the Chemical Society.
- E. Vine Tuson, Professor of Chemistry, Royal Veterinary College.
- W. Noel Hartley, Demonstrator of Chemistry, King's College, London.
- Frederick Alfred Manning, Analytical Chemist.
- E. Neison*, Analytical Chemist.
- R. Galloway, Professor of Chemistry, Royal College of Science, Dublin.
- Charles T. Kingzett, Analytical and Consulting Chemist.

* Now E. Neville Nevill, F.R.S.

John Attfield, Professor of Practical Chemistry, Pharmaceutical Society of Great Britain.

C. R. Alder Wright, D.Sc., Lecturer on Chemistry, St. Mary's Hospital.

James Bell, Principal of the Government Laboratory, Somerset House.

Michael Carteighe, Examiner in Chemistry to the Pharmaceutical Society.

A. Crum Brown, Professor of Chemistry, Edinburgh University.

William Crookes, Vice-President of the Chemical Society.

The Institute was registered as a company limited by guarantee, with special license from the Board of Trade, authorising the omission of the word "Limited" as the last in the title, in consideration of the income and property of the company whencesoever derived being devoted to the furtherance of certain objects, and not for profit.

The objects of the Institute were defined in the Articles as **OBJECTS.** follows:

"(a) To ensure that consulting and analytical chemists are duly qualified for the proper discharge of the duties they undertake by a thorough study of Chemistry and allied Sciences in their application to the Arts, Public Health, Agriculture, and Technical Industry.

"(b) To adopt such measures as may be necessary for the advancement of the profession of Chemistry, and particularly for the maintenance of the profession of Analytical and Consulting Chemist, on a sound and satisfactory basis.

"(c) The doing of all such other lawful things as are incidental or conducive to the attainment of the above objects."

It was provided that the income and property of the Association, whencesoever derived, should be applied solely **ORIGINAL ARTICLES.** towards the promotion of the objects of the Association. Further, although the Association was empowered to confer upon any duly qualified person the rank or degree of Fellow or Associate of the Institute of Chemistry, it was expressly forbidden to grant to any person any certificate of proficiency or of qualification or of the holding by him of any such rank or degree as aforesaid—a duty, however, which was specifically conferred on the Institute by Royal Charter in 1885.

Provision was made, under the Articles of Association, for the election of Censors to inquire into alleged misconduct or infringement of the regulations by Fellows or Associates.

The Institute was debarred by one of its articles from paying, directly or indirectly, any dividend or bonus to any of its members. It was to consist for the time being of 500 members, who alone should be qualified to vote at its general

1877.

ORIGINAL
ARTICLES.

meetings and to exercise any share in its administration. The government of the Institute was vested in a Council, consisting of a President, six Vice-Presidents, a Treasurer, and twenty-seven Ordinary Members, and the first Council were to continue in office "until the first General Meeting, which shall be held after the end of the second year after the registration."

Of the first Council, the following still remain:—Vice-Presidents: A. Crum Brown and William Odling; Members of Council: William Crookes, C. E. Groves, Douglas Herman, David Howard, C. T. Kingzett, E. J. Mills, E. Neison (now Nevill), J. Emerson Reynolds, and R. R. Tatlock.

QUALIFICA-
TIONS FOR
MEMBER-
SHIP.

For the first six months after the registration of the Institute, the Council had the power to admit Fellows and Associates, upon such evidence of fitness as the Council might deem sufficient, at their discretion; but after the first six months, and during the then succeeding thirty calendar months, every candidate for Fellowship was required to produce the following evidence of qualification: That he was not less than twenty-four years of age; that he had passed through a course of three years' training to the satisfaction of the Council in theoretical and analytical chemistry and physics, and had subsequently been engaged for three years either as assistant to a chemist of repute or as a professor or demonstrator of practical chemistry at some known university, college, or medical school, or as a chemist in a technical industry; or had, after three years' training as above, conducted and published an original research of sufficient merit, in the opinion of the Council, on some chemical subject requiring practical work; or, that he had been trained and occupied in other ways which, in the opinion of the Council, were equivalent to fulfilling the above conditions.

An Extraordinary General Meeting of subscribers to the Memorandum of Association was held at the Chemical Society's Rooms at Burlington House, London, on November 1st, 1877, when it was resolved that the entrance fee would be £2 2s. instead of £5 5s. for all Fellows elected prior to February 2nd, 1878. This was confirmed at a meeting held on November 17th, 1877, when the first officers of the Institute were declared duly elected as Fellows.



CHARLES EDWARD GROVES, F.R.S.

Secretary : 1877—1887 ; Registrar and Secretary : 1887—1892.

At a Meeting of the Council held on the same day, Mr. Charles E. Groves resigned from the Council and was elected Secretary, and a cordial vote of thanks was accorded to Mr. Walter Noel Hartley for his valuable honorary services in connection with the foundation of the Institute. Two hundred and twenty-one Fellows were elected,* and a Nominations Committee was appointed to consider and report upon subsequent applications for membership. A Committee was appointed to secure and furnish an office, and it was decided to open a banking account.

The earliest work of organisation was conducted from an office at 32, Walbrook, in the city of London; in January, 1878, a room was taken at a rental of £30 per annum, in the premises on Somerset House Terrace, adjoining King's College, now occupied by the Principal of the College, but then let to the Royal Statistical Society, the meetings of Council and general meetings of the Institute being held at the Rooms of the Chemical Society, at Burlington House, Piccadilly.

The objects of the Institute as defined in the Articles of Association could easily be interpreted to cover an extensive field of operations; but the Council did not feel justified in taking any course of action which might be regarded as interference with the work of other Societies. The main object, that of hall-marking competent professional chemists, had been modified by the Board of Trade, and it was many years before the public could be brought to realise that membership of the Institute conferred a distinct qualification for practice.

It has already been recorded that some had favoured the proposals that the Chemical Society or the Society of Public Analysts should take the lead in the matter of organisation, but there was a general consensus of opinion that whatever means were adopted the movement was desirable and necessary. Practically no difficulties arose until definite steps had been taken for the registration of the Institute as a Company. At that point, opposition was raised by some who objected to the decision of the Organising Committee to restrict membership to those whom the Council

* Many of these did not actually join until later.

1878.
EARLY WORK
OF THE
COUNCIL.

deemed competent and not to admit all who were then in practice*; while others held that the registration should be limited strictly to practising professional chemists, to the exclusion of all not so engaged.

Obviously, to have adopted that proposal would have defeated the main object of the Institute, which was to form a register of the trained and competent. While the Institute did not attempt to prevent the practice of Chemistry by those who did not seek admission to its ranks, any benefits which might accrue to the members were sought for competent chemists collectively, and not specially for a particular class.

While the Council were engaged in framing the policy of the Institute and in the routine business of enrolling members, their work was not directly of such general interest as to be regularly communicated to the Fellows and Associates, or to the press. Their proceedings were regarded as somewhat mysterious, and a good deal of curiosity was aroused among chemists as to what was actually being done. The Council found some difficulty in keeping alive the interest of the members, who naturally expected some return from an organisation the foundation of which had aroused so much commotion in scientific circles, and to which they contributed an Entrance Fee of five guineas and an Annual Subscription of two guineas.

Among those who had been most strenuous in promoting the foundation of the Institute were a few whose evidence of competency did not justify the Council in entertaining their immediate election; some of these considered themselves affronted on being asked to produce evidence of competency, while others objected to the payment of fees. These discontented ones were not slow to accuse the Council of favouritism, or to show their disappointment by taking part in the criticism of the apparent inactivity of the Institute.

* One well-known professional chemist openly declared that he had entered at the Board of Trade a protest against the registration, urging that no organisation should be permitted, unless it started on the distinct basis of admitting at once every practising chemist in Britain at the date of its formation; and that no body of men should be granted any registration unless they were themselves practising professional chemists. The Board of Trade, however, replied that they had no legal power to refuse registration.

Within a short time, however, there were comparatively few men of eminence in scientific and professional chemistry who had not joined the Institute. They joined with little or no thought of personal gain ; but, on the contrary, gave their material support and personal influence for the good of the profession generally. Before the examinations had been properly instituted, and the value of the qualifications had been thereby enhanced, the advantage of membership was but slender to those who had been elected in virtue of reputations already acquired. It was unavoidable that some years had to elapse before the examinations began to attract candidates in substantial numbers ; the increase in membership was therefore not so rapid as to make the organisation numerically strong. There was little to arouse enthusiasm, and not a few discontinued their subscriptions, but the majority of the Original Fellows remained loyal, and patiently awaited a development which, since the Council had determined to set a high standard in the requirements for membership, must necessarily be slow. The Fellows were eager for the success of the Institute, though they realised that the benefits would be reaped in a greater degree by their successors. They wanted to know what the Institute would undertake besides holding examinations and keeping a register ; what part it would take in public affairs ; what would be done with the funds ; whether a journal would be published, and so forth.

The question of formulating a code of professional etiquette was among the first to be discussed by the Council, though at that time no such code was published. At the second Meeting of the Council, a discussion took place on the precise meaning of the word "unprofessional," which occurred in Article 69, but, pending the appointment of Censors, the further consideration of the matter was postponed. The position of the profession in its relation to other professions was by no means clearly established, for the reason that, in the absence of any restriction on analytical practice or any recognised diploma for such work, it was frequently undertaken by members of other professions, who, in many cases had a very meagre knowledge of the science of chemistry.

The Council proceeded to determine the course of training

PROFES-
SIONAL
ETIQUETTE.

REGULA-
TIONS.

1878.
REGULA-
TIONS.

and qualifications for candidates for the Associateship, and generally to devise means to establish the main business of the Institute—the registration of properly qualified professional chemists. Invitations to join the organisation were issued to Chemists of standing known to the Council, the names being selected by a specially appointed Nominations Committee. Notices were published in the daily press and in scientific journals to the effect that the time for admission of Original Fellows and Associates would expire on February 2nd, 1878, at which date it was reported that 225 Fellows had been admitted and in addition 142 had been *elected* but not formally *admitted*—*i.e.*, their fees had not been received. A second Committee investigated the qualifications of the candidates, whether nominated by Members of Council or not.

The Council stipulated from the first that a high standard of education and training should be demanded in every case, and determined to maintain the standard by a carefully defined system of examinations. A Committee was appointed to formulate a scheme and to report as to the best method of attaining that object.

FIRST
ANNUAL
GENERAL
MEETING.

The first Annual General Meeting was held on February 1st, 1878, when the President delivered the Address to which reference has already been made. A discussion arose as to the meaning of the terms "Member" and "Fellow" used in the Articles of Association, and this ambiguity was referred to the Council for consideration. The term "members" has since been used to denote the Fellows and Associates collectively, but is otherwise avoided, so that there should be a distinction between the senior and the junior grade.

At this meeting the first Censors were elected: The President, *ex-officio*, Dr. Odling, Prof. Abel, Dr. Warren De la Rue, and Prof.—now Sir Henry—Roscoe.

By the 1st of February, 1878, the number of members was 225, and three years later it had increased to 425. In view of the fact that the elections were limited by strict investigation of the claims of each Candidate, this progress must be regarded as somewhat remarkable. By way of comparison with earlier times, when however there were fewer chemists, it may be mentioned that the number of Fellows of

the Chemical Society did not reach the latter figure until its twenty-third anniversary, though candidates for the Fellowship of that Society were not required to possess any definite scientific qualification. This affords an interesting indication of the position of chemistry in the years 1841 to 1864, and in 1877 to 1880, and clearly illustrates the growing interest in chemistry and the direct advance which was being made in affording means for the education of chemists.

In April, 1878, the examination scheme was adopted by the Council, and in May a memorandum was ordered to be printed for the information of Candidates.

1878.

In the *Chemical News* of June 14th, 1878, a list of the Officers and Council and the names and addresses of the Fellows and Associates were published with the following short accounts of the objects and of the qualifications for membership :—

“ This Institute has been established to ensure that Consulting and Analytical Chemists are duly qualified for the proper discharge of the duties they undertake by a thorough study of Chemistry and allied branches of Science in their application to the Arts, Public Health, Agriculture and Technical Industry.

“ The Council of the Institute requires satisfactory evidence as to training and fitness for the work of the Consulting and Analytical Chemist to be produced, before admitting any person to the rank of a Fellow, and an examination is imposed whenever the Council deems it necessary. Fellows must be at least twenty-four years of age.”

In the same month, the Council appointed a Committee to revise the Articles of Association. Incidentally, this Committee devoted their attention to the removal of the ambiguity which existed in the use of the words “ Member ” and “ Fellow ” and similar matters on which difficulties in the interpretation of the Articles had arisen. Their Report was submitted to the Council in December, and the amendments were submitted to an Extraordinary General Meeting of the Institute held on February 1st, and confirmed at a further meeting held on February 21st, 1879. The word “ Member ” applies to both Fellows and Associates.

Early in 1878, Prof. Frankland offered two prizes of £50 each for original investigations involving gas analysis, he being desirous of stimulating the study of that particular branch of work. Later, however, the conditions were widened and, in January, 1880, one of the prizes was awarded to

1878.

Mr.—later Dr.—Leonard Dobbin for a research “On some Reactions of Tertiary Isobutylic Iodide.” The other prize was awarded in February, 1881, to Mr. Frank Hatton for his papers: (i.) “On the action of bacteria on various gases”; (ii.) “On the oxidation of organic matter by water and filtration through various media”; and (iii.) “On the reduction of nitrates by sewage, spongy iron, and other agents.”

REGULA-
TIONS.

The Council proceeded with the preparation of Regulations for the admission of Fellows and Associates in accordance with the Articles of Association, and by November, 1878, they had decided the syllabus of the practical examination. Announcements appeared in the scientific press inviting chemists to submit applications stating their claims for membership, which were carefully considered by a Committee. The first examination was held in February, and the second in August, 1879, the examiner being Dr. W. J. Russell.

CENSORS.

In the original Articles of Association provision was made for the election of Censors, though, as already indicated, no code of ethics had been formulated. The Council felt that this was a matter in which some attempt should be made to ascertain the opinion of the general body on a number of questions involved.

CONFER-
ENCES.

On October 25th, 1878, it was resolved to hold “a series of Conferences for the purpose of raising discussions on points of professional politics and ethics, such Conferences to be merely for discussion,” the objects being to afford opportunities for the interchange of opinion and to promote a better understanding among the members on professional matters. In order to insure freedom of discussion, it was considered undesirable that any formal resolutions should be passed at these meetings, but the Council hoped that the consideration of various points of professional ethics would tend to the formation of a code which would be voluntarily accepted by members of the Institute; and, in the course of time, influence the profession generally. The Conferences were, in most cases, reported and published to the Fellows and Associates. Reference may now be made in this record to the proceedings of each Conference in turn, as many of the matters discussed are still of much interest.

The first Conference was held on November 22nd, the subject for discussion being "Trade Certificates." 1878.

In the early days of professional chemistry the practice of giving reports and certificates of analysis for publication was prevalent, and was frequently abused—quite apart from higher ethical considerations—in that such reports and certificates were often merely laudatory statements apparently not based on definite scientific data, or did not include facts of material importance, or, possibly, were given on the results of the examination of single samples not fairly representing the bulk. TRADE CERTIFICATES.

The Conference was opened by the President, and the discussion which followed was particularly valuable at that time, indicating as it did the state of professional feeling on a matter which had always been one of much difficulty and delicacy, especially in its bearing on the status of professional chemistry in the eyes of the public. It may also be regarded as valuable even now, as the views then held still afford guidance to members of the profession.

Though no definite conclusions were arrived at on this occasion, the view expressed by several at the meeting is undoubtedly held by the majority at the present time, viz., that nothing reflects so much discredit on professional chemists as the system of giving, for publication, certificates other than those containing only statements of fact based directly on the results of scientific investigations. It is perfectly natural that traders should apply to experts for information, and it certainly must be possible for an expert to give an opinion which cannot be misinterpreted or misused, and which shall guide and not mislead. Any written opinion as to the quality or value of anything bought and sold may be regarded as a trade certificate. Prof. Frankland divided such certificates into two categories: (i.) opinions or reports made to indirectly interested parties, such as those to Government Departments and municipal authorities; and (ii.) opinions or reports made to directly interested parties, such as those made to companies and private individuals, who are only interested in the bias of opinion being either in favour of, or against, the article or process reported on. With regard to the first category, the professional chemist rarely, if ever, experienced any difficulty, from an ethical point of view. In respect of the second, there appeared to be a consensus of opinion on some important points. The chemist should employ his best endeavours to prevent the misuse of his reports, and, where possible, publicly expose—if he could not prevent—such misuse. His safeguards should be in the employment of trustworthy methods of analysis, close adherence to experimental facts, rectitude of opinion, and the avoidance of expressions susceptible of unfair use. Few things could be more harassing to a professional man than to find that he had given a rash and ill-considered opinion. He would live to regret it exceedingly, for it might be used against him at any time so as to affect his position seriously, both with the public and with his fellow-practitioners.

1878.

Some held the view that if certificates for publication were not granted at all, work would fall into incompetent and unworthy hands, thereby, to a certain extent, encouraging rather than discouraging the kind of "trade puff" which was certainly not within the category of what was allowable. On the other hand, experience showed that chemists who resorted to such practices were commonly the least successful in their profession and generally held in small repute among their brethren. The majority agreed that the publication of certificates for advertisement purposes should be avoided altogether.

PUBLIC
ANALYSTS.

Towards the end of 1878, a Bill was before Parliament for the amendment of the Sale of Food and Drugs Act, and steps were taken by the Council of the Institute to prevent the inclusion of a clause which the promoters of the Bill had drafted, giving authority to public analysts to make analyses of potable water for a fee of one guinea. The Act did not provide for the analysis of water, though in many cases public analysts were then, as now, entrusted with the examination of water supplies.

SECOND
ANNUAL
GENERAL
MEETING.

In December, the Articles of Association which had been under revision were ready for submission to the members and they were duly adopted by an Extraordinary General Meeting held on February 1st, 1879, on which date the second Annual General Meeting was also held.

LEGISLA-
TION.

In the same month, the Council appointed a Parliamentary Committee "to report to the Council on any matters affecting the profession which are or ought to be brought before the Government or legislation." One of the first subjects referred to the consideration of this Committee (February 28th, 1879) was that of professional titles, which had given the founders of the Institute so much trouble in framing the Articles of Association to the satisfaction of the Privy Council, the Board of Trade, and the Pharmaceutical Society. The title "chemist" had been restricted by the Pharmacy Act, 1868, to members of the Pharmaceutical Society and persons duly registered under the Act for the sale and dispensing of poisons. The Committee recommended the Council to communicate with the President of the Pharmaceutical Society* directing attention to the "injustice caused to scientific chemists not

* The Council of the Pharmaceutical Society referred the matter to their General Purposes Committee, whose report contained a recommendation that the request of the Institute be acceded to when an opportunity arose. The report and recommendations were received and adopted. *Pharm. Jour.*, May 10, 1878; Vol IX., pp. 922, 923.

engaged in the practice of pharmacy by the operation of Clauses I. and XV. of the Pharmacy Act of 1868, which prohibits them from assuming the title of chemist; and at the same time urging that in any application to Parliament for an amended Pharmacy Act, such alterations may be made as will remove the disability." The Committee also recommended that the President and the Council of the Chemical Society should be communicated with on the subject.

1879.

During the early years of the Institute, Conferences were also held to provide opportunities for the interchange of views on matters involving diversities of information, experience and opinion, in connection with practice in the various departments of the profession. On February 27th, 1879, a Conference was held on "The Adulteration of Food," the discussion being opened by Dr. Augustus Voelcker, Vice-President. The meeting was adjourned, and the discussion continued on April 2nd.

ADULTERA-
TION OF
FOOD.

An opportunity was thus afforded for interchange of opinions, between analysts practising the profession in connection with the administration of a comparatively new Act. Public analysts were appointed because the necessity of having food and drugs examined had been forced upon the public, and the Legislature was obliged to pass an Act for the purpose. To carry out this Act the authorities did not lack power, but appeared to dislike using it. The remuneration offered to analysts was in many cases absurd, the result being that, in several instances, appointments were obtained by incompetent persons. For this, subsequent officers have doubtless had to suffer. The general opinion was that the Sale of Food and Drugs Act, which had come into operation in 1875, had been inadequately carried out in respect of the number of samples taken. Where prosecutions followed, the fines imposed were too often ridiculous, calculated to promote rather than to check adulteration, notwithstanding the discredit brought on the offender. Differences of opinion as to methods of analysis obviously existed, but with the advance of knowledge and improvements in methods since that time, the scientific working of the Act became undoubtedly more satisfactory.

On November 12th, a Conference was held on "The Relations of the Chemical Profession to Public Sanitation," on which occasion Dr. Alder Wright, submitted a paper as the basis for discussion.

PUBLIC
HEALTH.

He propounded a scheme for the promotion of sanitary legislation in directions—other than those pursued by the medical officers of health—requiring special chemical knowledge, particularly in connection with water supplies, sewage contamination, and nuisances such as unwholesome emanations in the air, etc.

1879.

— —

The authorities under the Rivers Pollution Prevention Acts, the Alkali, etc. Works Regulation Act, and other "health" statutes, in connection with which many Fellows are now engaged, carry out much that is necessary in these respects; and the intimate connection between chemistry and sanitary science is become more apparent. Reference will be made later to the establishment of an Examination in Biological Chemistry with a view to supplying the community with chemists skilled in such matters.

PRIZES.

Also in November, 1879, Dr. C. Meymott Tidy offered a prize of £25 for the best investigation of special reactions of the alkaloids and their separation from organic mixtures, to be competed for on the same conditions as the President's prizes. This offer was widely circulated, but apparently no investigation was submitted and the prize was never awarded.

THIRD
ANNUAL
MEETING.

On February 1st, 1880, the third Annual General Meeting was held. The Council reported that the Register contained the names of 370 Fellows and 54 Associates.

Prof. Frankland remarked that the number of members, so far from being a matter for congratulation, might have been one to be deplored if a strict investigation of the qualifications of candidates for admission had not been maintained. Although there were still some practising chemists of eminence whose names the Council would have liked to see enrolled, their number was very small. He urged the professorial members to encourage students to prepare for the Associateship, for by so doing they would not only be contributing to the elevation of chemistry as a profession, but also to the better education of chemical students in general, since the training prescribed by the Council was precisely that which was necessary for all competent chemists.



[Barraud.]

SIR FREDERICK AUGUSTUS ABEL, BART., K.C.B., G.C.V.O.,
D.C.L., F.R.S.

President: 1880—1883.

FREDERICK AUGUSTUS ABEL : PRESIDENT, 1880—1883.

The enthusiasm which marked the foundation of the Institute had in some measure lessened at the close of the first three years of its existence, when it fell to the lot of Prof. Abel to guide the Institute through a somewhat uncertain period. He was one of the distinguished students of Hofmann, had succeeded Faraday, in 1851, as Professor of Chemistry in the Royal Military Academy, Woolwich, and, in 1855, had been appointed Chemist to the War Department, in charge of the laboratory at Woolwich Arsenal. Largely owing to his tact and judgment, the Roll of the Institute was well maintained, in spite of the fact that the advantages of membership were slight, particularly as many of the Original Fellows had already achieved distinction and had been elected without examination.

On February 20th, 1880, a Conference was held on "What should be the Relations of Professional Chemists to each other, to their Clients, and to the Public in Legal Cases?" The opening paper was read by Mr. William Thomson, of Manchester.

ETHICS OF
FORENSIC
CHEMISTRY.

Mr. Thomson said that the discussion of such a matter by the members of the Institute was important as tending to the adoption of principles which would become precedents for future guidance. The main question raised was whether a professional chemist should "act truly and impartially and give his unbiassed opinion or should strive by all the devices in his power to uphold the side of his client, even if he be in the wrong." Mr. Thomson quoted the opinion expressed by Dr. R. Angus Smith, in a paper read before the Society of Arts: "We can listen to the barrister using as tools the interests and feelings of men, and moulding them to his purpose, but we stand aside from a man who twists the expression of natural law for his own interest, as from one who, before his eyes, has neither the fear of God, nor the love and admiration of nature." There would seem to be no doubt that the professional chemist should give an unbiassed opinion without the slightest regard to the question whether that opinion was favourable to his client. Next, the desirability of avoiding the clashing of scientific evidence was considered. The methods of the courts were not always favourable to the elicitation of straight-forward evidence: the answers to interrogatories, being mainly unqualified "yes" or "no," it was often exceedingly difficult for judges having little scientific knowledge

1880.

—
ETHICS OF
FORENSIC
CHEMISTRY.

to adjudicate in scientific matters. Neither side being in possession of all the facts, questions which might easily be decided in the laboratory by a few experiments were frequently discussed in court without much hope of solution. If the chemists could meet beforehand, it was not unlikely that the scientific points of difference would in many cases be settled in such a manner that the legal points hinging on the facts could be more readily dealt with by the Court. In cases where *opinion*, and not fact, was in question, two chemists might hold opposite views and make contradictory reports : in that event, it would seem to the casual observer that one must be wrong and, thus, the reputation of the profession was more or less injured. It was desirable, in any case, that professional men should avoid expressions tending to cast a slur on the knowledge or ability of their opponents.

In the discussion which followed it was agreed that all unnecessary adverse criticism before the public would be better avoided, and that professional witnesses should not allow themselves to be led into making disparaging statements with regard to one another. The imputation of motives to opponents was quite inadmissible. Witnesses should try, as far as possible, to get acquainted with both sides, in order to give evidence fairly and impartially. The public had a right to expect that a scientific man should found his opinions on facts and give his evidence in a straightforward way, with even more certainty and precision than an ordinary witness.

This matter was dealt with subsequently in an address delivered by Prof. Odling in 1885, and also at a Conference in 1894. It will be gathered that the feeling of the profession has been that a chemist engaged in a legal case should perform the duties of adviser up to the point of his appearance as a witness, but, at that stage, the nature of his duty changes entirely. His duty, in the first instance, is to advise his clients and to use his best endeavours for their interests ; but when—in the witness box—he is dealing with matters of opinion, his evidence should be unbiassed and given without regard to its effect on his clients' case.

REGULA-
TIONS.

The period of time for the election of members without examination being determined in October, 1880, the Regulations were carefully considered, provision being made to afford special facilities for the admission of candidates who had taken degrees in chemistry, whereby their university examinations were accepted in lieu of the class examinations required

to be passed in accordance with the Regulations of the Institute. 1880.

On December 8th, 1880, a Conference was held on "Standards of Strength and Purity, and Evidences of Adulteration of Drugs," the discussion being opened by Dr. Theophilus Redwood, F.R.S. ADULTERATION OF DRUGS.

The Fourth Annual General Meeting was held on February 1st, 1881, the Council reporting that there were then registered 422 Fellows and 51 Associates. The report also included particulars of the requirements for membership, and dealt with the work of the Institute during the year. Prof. Abel in his presidential Address referred to the fact that the annual subscriptions of members had so far contributed largely to the accumulation of funds. He was aware that there were some who looked for immediate substantial return for their subscriptions, but he reminded them that the Institute could only be said to have been just launched into existence and funds would be required for the development of its character and its sphere of action. FOURTH ANNUAL GENERAL MEETING.

The question of publishing a periodical, distinct in character from a purely scientific journal, dealing with matters of special interest to professional chemists, was raised at an early stage. In October, 1879, Mr. Neison (now Nevill) had suggested the publication of chemical evidence given in the Law Courts, and in March, 1881, the Council appointed a Committee to consider the question as to the publication of a Journal by the Institute. The Committee reported in favour of the proposal and suggested that the Journal might contain the following: Original articles on subjects of professional interest; reports of Conferences; original communications; short reports of Law cases in which professional chemists are engaged as experts; full reports of new and important analytical papers published in foreign journals; accounts of new or improved manufacturing processes; chemical patents; and correspondence. JOURNAL.

The report was received, but the consideration of its

1881.
JOURNAL.

adoption was postponed until later in the year, when the Council decided that the available income was insufficient to provide for the cost of production of such a publication.

The Chemical Society and the Society of Public Analysts, each in its own sphere, provided the means of discussing and publishing the methods and results of chemical investigation. The Institute made no attempt to interfere with their work, and the Society of Chemical Industry, then recently founded, having started a Journal covering important divisions of the proposed scheme, this was abandoned by the Institute. An endeavour was made early in 1882, to come to terms with that Society for the supply of its Journal to the Fellows and Associates of the Institute, but this arrangement also was found impracticable. In later years, Dr. James Bell advocated the establishment of a journal, contending that there was an opening for a good comprehensive analytical periodical, but, owing to the expense involved, it was found inadvisable for the Institute to attempt such a scheme. The Council, however, have in recent years published in the Proceedings of the Institute reports on many matters of wide professional interest with which they have been able to deal, and on the representations which they have made from time to time in public matters.

CONFERENCE
ON PROFESSIONAL
ETHICS.

In May, 1881, the Conference Committee suggested the consideration of the subject of discrepancies in commercial analyses. It was arranged that a Conference should be opened by Prof. Edward Frankland, who prepared, as the basis for discussion, a paper "On Certain Points in the Ethics of Professional Chemistry." The meeting was held on December 8th.

The questions considered related to the taking of samples for analysis, the methods to be employed in analysis, the method of stating results, the custom of buying and selling by sample as analysed by an analyst agreed upon, and reference in case of discrepancies.

On the question of sampling, there appeared to be a general consensus of opinion that where the work was mechanical, the sampling should be left to those accustomed to it; but where the chemist might usefully exercise his knowledge and experience, and where he should be informed upon particular circumstances, it was often desirable that he should take samples himself. In most cases the duty of the chemist was confined to analysis and investigation. Where the sample was the subject of a commercial contract, it was desirable that the parties concerned should agree upon the sample to be submitted for analysis.

On the question whether methods of analysis should be stated in the report, Prof. Frankland said that if the conditions were such that knowledge of the methods employed should be made known in order that the analytical figures might be rightly appraised, those conditions ought to be included in the report. The chemist should employ the most reliable methods with which he was acquainted, and if requested to adopt any particular method, he should be careful that there was no sinister intention of making other than legitimate use of the results. The statement of analytical results should be as clear and precise as possible. In the case of discrepancies, it was often desirable that the chemists concerned should confer. The appointment of a referee was frequently unavoidable; but if buyer and seller agreed to abide by the findings of a trustworthy analyst in the first place, the question of appointing a referee would not arise. When two chemists were named, it was practically necessary to name a referee also.

1881.

In November, 1881, a Special Committee was appointed to consider the question of professional charges for analyses and other professional services with a view to formulating a minimum scale which might be submitted for discussion at a Conference. The Committee prepared a draft schedule covering a limited number of analyses and investigations, but the Council then deemed it inadvisable to proceed with the matter, which has, however, been raised, subsequently, from time to time until 1912 (see p. 252).

PROFES-
SIONAL
CHARGES.

During the year 1881, the qualifications required of candidates for admission to the Institute were more definitely formulated, especially with reference to the three years' training required by the Articles, and the Council gave notice of regulations to come into force in October, 1883 (see p. 73).

REGULA-
TIONS.

Professor Abel was unable to be present at the Fifth General Meeting held in February, 1882, but copies of his Address were issued to the Fellows and Associates. He referred at some length to the new Regulations and to the various means adopted by the Council to maintain greater interest on the part of members in the work of the Institute. The Conferences had not always been very well attended, though the published reports were appreciated, but the Council hoped to secure occasional numerously attended meetings of the Institute. Acting on the recommendation of the Conference Committee, they had decided to provide experimental demonstrations of particular analytical processes, or physical

FIFTH
ANNUAL
GENERAL
MEETING.

1882.

FIFTH
ANNUAL
GENERAL
MEETING
LECTURES.

operations, not commonly practised by professional chemists, a practical acquaintance with which might at any time prove useful or necessary.

Lectures were, therefore, instituted, the first being delivered in February, 1882, by Mr. Robert Warington, "On modern methods of gas analysis and the apparatus employed therein," and the second, in January, 1883, by Mr. Cornelius O'Sullivan, on "Polarimeters and their practical applications." For the illustration of the latter, "important assistance was obligingly furnished by the President of the Royal Society." Although other lectures were promised, they were not delivered. A new scheme with rather different objects was inaugurated in 1911, and will be mentioned in due course.

LEGISLA-
TION.

During 1881 and 1882, the Parliamentary Committee devoted considerable time to the formulation of suggestions for the improved working of the Sale of Food and Drugs Act, particularly in connection with the appointment of Public Analysts and the qualifications necessary for professional chemists holding such appointments.

HOME
OFFICE.

In March, 1882, the Secretary of State for the Home Department requested the Presidents of the Royal Colleges of Physicians and Surgeons to nominate experts to act as Government referees in cases of suspected poisoning. Prof. Abel, as President of the Institute, suggested that such experts should be chemists having special attainments and experience in such matters. Two eminent medical men who were also Fellows of the Institute were subsequently appointed. Shortly after, the Institute was asked to advise the Home Office with reference to the law relating to the sale of poisons, and submitted several recommendations, the result of the deliberations of a Special Committee.

RECEPTION

On March 22nd, the President of the Chemical Society and the President of the Institute held a joint reception at the Crystal Palace, Sydenham, on the occasion of an Electricity Exhibition—chiefly illustrating various systems of lighting.

In October, a meeting was held jointly with the Society of

Chemical Industry—at Birmingham, when Fellows and Associates were afforded an opportunity of visiting various works in the district, including Messrs. Chance's alkali and glassworks, Earl Dudley's ironworks, the Birmingham gas-works, and the Mint. 1882
—
VISIT TO
BIRMING-
HAM.

In 1882, the scheme of training prescribed in the Regulations was adopted by various Colleges, courses being specially arranged for candidates intending to take the examination for the Associateship of the Institute. In some respects the Institute may have suffered by the Council insisting too strictly, at the time of its foundation, on evidence of high qualifications. However, the original objects of endeavouring to make the membership a guarantee of competency, and of registering only competent persons, were consistently adhered to, the main duties of the Institute being the assurance of scientific competency and attainment, the registration of the properly qualified, and the organisation of a highly scientific profession. It was held that mere examinations, however carefully conducted, did not afford an entirely satisfactory guarantee of knowledge, especially in the case of such a subject as chemistry. *Systematic training* was, therefore, insisted upon, and this requirement contributed largely to the efficiency of the general body. In the Report for the year 1882, it was stated that the Council had decided that every candidate for the Associateship should be required to produce evidence that he had passed through a course of at least three years' study, in an institution previously approved by the Council, in Theoretical and Analytical Chemistry, Physics and Elementary Mathematics, before admission to the practical examination of the Institute. REGULA-
TIONS.

Local Examiners were appointed at Birmingham, Bristol, Dublin, Glasgow, London and Manchester; and though, in the aggregate, very few candidates presented themselves, examinations were held in February and August of each year from 1879 until 1883, in which year two candidates were also examined abroad: one in India and one in Japan. EXAMINA-
TIONS

At the Sixth Annual Meeting, held on February 1st, 1883, Prof. Abel, in commenting on the work of the year, referred

1883.
 SIXTH
 ANNUAL
 GENERAL
 MEETING.
 FINANCES.

to the secession from the Institute of a number of the Original Fellows, some of whom felt that, having given their support at the foundation, they were not called upon to do more, unless the Institute could provide them some directly tangible return. At the end of the first five years, the accumulated funds amounted to about £3,000, representing a substantial proportion of the subscriptions apart from Life Composition Fees. It was quite obvious that the Council could not maintain the policy of saving to this extent, and, at the same time, develop the work of the Institute in any direction involving considerable expenditure of income. Already the question of reducing the amount of the annual subscription had been raised, and this was discussed from time to time, though it remained as originally—two guineas—until after the Royal Charter had been granted. The position of the Council was difficult, for it must be admitted that the reserve funds were somewhat slender in view of the approaching negotiations for re-incorporation.

ETHICS.

In February, 1883, the Council appointed a Committee on Professional Practices, for the purpose of considering the advisability of establishing a definite code. In April of the same year the custom of advertising for professional practice was specially referred to the Committee for their consideration, and, in the following month, it was resolved: "That the custom of advertising by members of the Institute be discouraged as far as possible, and that in the case of any objectionable advertisement being brought under the notice of the Council, the President be requested to write to the advertiser to discontinue the practice." This resolution indicates the feeling of the Council on the matter at that time, and it was, no doubt, of service to the Censors, to whom the duty of investigating complaints on such matters was subsequently entrusted under the provisions of the Charter and Bye-Laws.

ROYAL
 CHARTER.

During Prof. Abel's presidency the question of the re-incorporation of the Institute under Act of Parliament or by Royal Charter was under consideration, and the Council were occupied with the preliminary discussion requisite to attaining that end.



[Soame.

WILLIAM ODLING, M.A., M.B., F.R.S.
President: 1883—1888.

WILLIAM ODLING : PRESIDENT, 1883—1888.

In February, 1883, Prof. William Odling was elected President in succession to Prof. Abel. He had received his early training under Hofmann, and subsequently at Guy's Hospital, where he became Lecturer. From 1856 to 1869 he had been Secretary of the Chemical Society, and from 1873 to 1875 President of the Society. He had been Fullerian Professor of Chemistry at the Royal Institution from 1868 to 1872, when he was appointed Waynflete Professor of Chemistry at the University of Oxford, which appointment he held until his retirement in 1912.

Under his guidance the Council took up in earnest the proceedings which Prof. Abel had initiated. In April, the matter of re-incorporation was referred to the Parliamentary Committee. A Bill was prepared and deposited at the Private Bills Office, having for its object to dissolve and re-incorporate the Institute under Act of Parliament; to obtain powers to confer certificates of competency or qualification after examination, and to admit practising chemists who were ineligible under the existing Articles of Association. On February 1st, 1884, an Extraordinary General Meeting was held, at which the Bill was approved, the Council being authorised to take steps, either to proceed with the Bill or, if found expedient, to petition for a Royal Charter. A Special Committee consisting of the President, Sir Frederick Abel, Mr. Michael Carteghe, Prof. Edward Frankland, Prof. J. Millar Thomson and Dr. Alder Wright, was appointed to proceed with or withdraw the Bill, or to apply for a Royal Charter, as they deemed advisable. These proceedings were confirmed at a second Extraordinary General Meeting, held on February 19th. In the meantime, the Bill was presented in the House of Lords on February 15th, read for the first time, and referred to the Examiners. On the 26th, the Lord Chancellor informed the House that the Examiners had reported that the Standing Orders had been complied with, but, in the opinion of Lord Redesdale,

PROCEED-
INGS FOR
RE-INCOR-
PORATION.

1883-5.
PROCEED-
INGS FOR RE-
INCORPORA-
TION.

THE ROYAL
CHARTER.

Chairman of Committees, the objects sought in the Bill were not such as should be brought before the House in a Private Bill. As pressure of business precluded any chance of introducing the measure as a Public Bill, the Special Committee determined to petition for a Charter.

The Petition was first presented on July 15th, 1884 and, after much consideration and revision, the Royal Charter was granted on June 13th, 1885. The re-incorporation occurred on June 30th, and an inaugural meeting was held in the following November, when the President (Prof. Odling) delivered an interesting Address, dealing with the duties of the Institute in its new position as an officially recognised professional body. He showed that by the granting of the Charter, official recognition had been given to chemistry as a profession. The fact had become more generally evident that professional chemists were necessary to the public and in governmental service, as well as in industrial and manufacturing undertakings, and the Institute was charged with the duty of providing competent chemists to fulfil these requirements. Although the value of science was thus receiving increased recognition, there still existed a number of persons who maintained that it was derogatory to science to make it subservient to the requirements, or contributory to the support of mankind. That such a view was unfounded was conclusively shown by the long list of the distinguished men of science of that and of a bygone generation, who had been actively engaged in professional work; for either their eminence had to be denied, or they must have been accused of practising for ignoble ends. Prof. Odling pointed out that the leading men in the professions of medicine and engineering acquired and retained their position, not necessarily by their contributions to pathology or mechanics, but because their very status was in itself evidence of high scientific ability coupled with high moral attainments. He proceeded to consider what advantages would be gained from the particular organisation of the Institute by (1) chemical science, (2) the public, (3) the Fellows and Associates themselves. Gain to chemical science would accrue from the duties entrusted to the Council of the Institute in the extension and improvement of chemical education: not only would the higher and more thorough

training required for admission to the Institute enable the members more adequately to fulfil the duties and responsibilities laid upon them, but the official organisation of the members into a recognised professional body would attract to its ranks men of higher ability and culture. The main object of training in chemistry would be to fit students to conduct original inquiry and not merely to be adept in repeating what had already been done, since many of the problems entrusted to professional chemists were new and their solution involved original investigation. Only by an extended systematic course of training—such as a professional man accepts as customary—could the requisite skill be acquired. The gain to the community in view of the increasing application of chemistry to legal investigations, to public health, to the detection of the adulteration of food, to agriculture and to the arts and manufactures, was that the public would be enabled to select, from an officially recognised organisation, men possessing evidence of competency and skill in the practice and applications of the science in all its varied departments, while the Charter provided that the Institute should be guided by strict rules of professional conduct. The gain to the Fellows and Associates was that they were united in a common endeavour to raise the character and increase the influence of the profession, thus contributing to the public estimation in which it was held. The growing respect for the profession would in turn react to the social and material advantage of its individual members. From the Institute, the members would derive the ability to exert a corporate and not merely individual action in matters affecting the status and interest of those engaged in the profession, and therefore it was incumbent on every member to do all in his power to raise the esteem in which the profession was held, and to consolidate that power “by his individual character and conduct, by the soundness of his professional work and by his scrupulous avoidance of everything which in other professions would be held derogatory.”

1883-5.
THE ROYAL
CHARTER.

Attention may here be drawn to the three most important paragraphs in the Petition for the Charter.

The first shows the necessity for such an institution :

1883-5.
THE ROYAL
CHARTER.

"That it is a matter of increasing importance to Government Departments, Corporate bodies and others requiring the assistance of persons competent to practise in analytical Chemistry and to advise in technological Chemistry that such persons should be properly trained and that their qualifications should be attested by certificates of competency granted by a scientific body possessing sufficient status, and that at present there is no Institution or Corporate body which has power to issue such Certificates."

The second shows the powers sought and defines the duty of the Institute to the public.

"That in the judgment of the Petitioners it would greatly promote the objects for which the said Institute has been instituted and would also be for the public benefit if the members thereof were incorporated by Royal Charter with power to afford facilities for the better education and examination of persons desirous of qualifying themselves to be public and technical analysts and chemical advisers on scientific subjects of public importance and with power to grant such certificates of competency as aforesaid, as, besides other advantages, such Incorporation by Charter would be a public recognition of the importance of the Profession of Analytical and Consulting Chemistry, and would tend gradually to raise its character and thus to secure for the community the existence of a class of persons well qualified to be employed in the responsible and difficult duties often devolving upon them."

The third indicates that, in return for the powers thus conferred, the Institute aims to maintain the profession both in efficiency and status.

"That the said Institute was not established for the purposes of gain, nor do the members thereof derive or seek any pecuniary profits from their membership, but the Society aims at the elevation of the Profession of Consulting and Analytical Chemistry, and the promotion of the efficiency and usefulness of persons practising the same, by compelling the observance of strict rules of membership, and by setting up a high standard of scientific and practical proficiency."

On November 27th, 1885, the liquidators reported on the "winding-up" of the affairs of the original Institute and the

transference of its property to the new Institute under deed, and received the thanks of the Council for their services. 1883-5.

During the negotiations for the Charter, the work of the Institute was continued under the Articles of Association.

In the Report of the Council submitted at the Seventh Annual General Meeting, held on February 1st, 1884, it was stated that the applications for membership had increased considerably, and that fifteen members had been admitted by examination. Examinations were held at local centres, when eligible Candidates were prepared to present themselves. The Council decided that candidates under the prescribed age of twenty-one years, who had complied with the Regulations, should be admitted to the examination for the Associateship, though they could not be elected until they attained that age. A list of universities and colleges formally recognised by the Council for the training of candidates for the Associateship was prepared and published, so that Candidates should be informed where the necessary training was obtainable. Both in the report and in the President's Address, reference was made to the preliminary proceedings towards the re-incorporation. Prof. Odling practically promised the reduction of the annual subscription after that event, seeing that while the functions of the Institute were so restricted, it was recognised that no call should be made on the Fellows in excess of what was actually required for efficiently carrying on its work. There was no great prospect that it would be of direct benefit to any but the youngest members, but as it was in the main their creation, they were expected to make some sacrifice in its interest. Prof. Odling expressed his regret that there were still a few eminent chemists who declined to co-operate with their younger brethren and held themselves aloof from their fellow-workers; if the Institute were engaged in a good work, they should be ready to aid it; if it were moving in a wrong direction, it was still more incumbent on them to make their influence felt from within by persistent effort to direct it aright, in the interests of their profession.

Since the year 1883, the Register of Fellows and Associates, as published annually, has been supplied to Government THE REGISTER.

1883-5. Departments, and to local and other public authorities concerned with the appointment of professional chemists.

OFFICES

In 1884 the Institute acquired an office at 9, Adelphi Terrace, where it still remained the tenant of the Royal Statistical Society, occupying a large room on the second floor, overlooking the Thames Embankment gardens.

CONFERENCE ON THE CHEMISTRY OF FOOD AND DRUGS.

On July 14th and 15th, 1884, a Public Conference on Food Adulteration was held at the International Health Exhibition, by invitation of the Royal Commission for the Exhibition, and a paper was read "On the Chemistry of Food and Drugs" by Dr. James Bell, Principal of the Government Laboratory. This Conference was largely attended by public analysts as well as by manufacturers and traders, who contributed to the discussion.

The publications at this time were few and meagre; special meetings, excepting the Conference at the International Health Exhibition, were discontinued. Although the Council were actively engaged, their work was mainly of routine character. The roll of membership was still below 500, and the Institute had not acquired that vitality and energy which would doubtless have been evident in a body representing a larger and more widely distributed profession, in which case the interest would probably have been more easily maintained. Persistent attempts in various directions to arouse enthusiasm seemed to fall just short of their aim and yet were sufficient for the time to hold together the main body until the Charter had been obtained and the right of the Institute to confer a qualification for practice had been thereby acknowledged; even then, years had to pass before such a right could be properly recognised by the community.

HONORARY TREASURER.

In December, 1884, Dr. Alder Wright retired from the Office of Honorary Treasurer, and Mr. David Howard was appointed in his place. At the Annual General Meeting, held in February, 1885, Dr. Alder Wright received the thanks

of the Institute for his services in that capacity since its foundation. 1883 5.

At a meeting of the Council held in October, 1885, a special Committee was appointed to prepare the Bye-Laws; and at the same meeting the Finance Committee was requested to consider the revision of the fees and subscriptions for membership. Later, the Committee was asked to report on the possibility of dispensing with the annual subscription by the payment of a compulsory composition, but this suggestion was considered impracticable.* The entrance fee was reduced temporarily from *five* to *four* guineas, and the annual subscription was reduced from *two* guineas to *one* guinea. The lowering of the subscription was partly due to the fact that many members were discontented with the small return which the Institute was then in a position to make to them. Its position as the recognised organisation of the profession was not attained so expeditiously as they had hoped; it provided no journal and held few meetings, while the requirements of membership were so exacting that rapid growth in numbers could not reasonably be expected.

At the Eighth Annual General Meeting, held on February 2nd, 1885, the President (Prof. Odling) referred to professional ethics in legal cases, urging particularly the necessity for mutual respect among chemists when so engaged. The Institute should be regarded as a permanent bond of union, by which the members should be brought into friendly and appreciative relationship with one another to effect the achievement of a common purpose—the maintenance and advancement of the position of the professional chemist, by guaranteeing and raising the standard, alike of competency and conduct, among those engaged in professional practice. Referring to ethics

BYE-LAWS;
FEES, ETC.

EIGHTH
ANNUAL
GENERAL
MEETING.

* The question has been raised in more recent times. Such a change, if practicable and expedient, would doubtless have advantages, but would involve a supplementary Charter and amendment of the bye-laws. The main question at issue was whether intending Candidates could afford to pay the amount which would be necessary: in other words, whether the Institute would be doing right in the interests of the public in closing the door to all who could not afford to pay such a sum, even if an instalment system were permitted.

1885-6.
EIGHTH
ANNUAL
GENERAL
MEETING.

generally, he said that the possession of qualifications prescribed by a recognised competent authority afforded undoubted advantages, social and material; but it also imposed certain correlative obligations in the observance of a code of professional conduct. The Institute desired to discountenance any form of irregular appeal to public patronage, and any practice the general adoption of which would be injurious to the character of the profession, and detrimental to the best interests of the members at large. Prof. Odling appeared to hold that the time had not then arrived for the Institute to lay down any hard and fast rules; it should be left to the growing sense of common interest and mutual obligation among the members as a corporate body to develop a more strictly professional tone of feeling in such matters. He explained that while the negotiations for the re-incorporation were pending, it had been thought advisable to leave other matters, financial, disciplinary and social, in abeyance until the status of the Institute was improved. Prof. Odling, on this occasion, acknowledged the hearty co-operation of Sir Lyon—later Lord—Playfair, for his interest in representing the nature of the aims of the Institute to the Privy Council in connection with the Petition for the Royal Charter.

ELECTIONS
AFTER THE
ROYAL
CHARTER.

Prof. Odling endeavoured to draw the members of the profession together and to bring them to realise their obligations to one another, in order that the status of the profession should be raised and maintained at a higher level. After the granting of the Charter, the Council decided to give to those who had sufficient claim to be included in the new corporation, an opportunity of becoming registered, and consequently many applications from chemists from all parts of the kingdom were received and a considerable number were duly elected.

It was feared by some members that the "opening of the doors" of the Institute to other chemists at this period would be a retrograde step and tend to lower the general standard of the qualifications and the status of existing Fellows and Associates; but the Council were very cautious in admitting Fellows without examination, and exercised their powers only in cases where the evidence of training and fitness produced by

the candidates fully justified direct election; all others were required to take the examination. By this means the Institute was strengthened considerably by the support of many who had not joined the original association. Several who had been Original Fellows and had resigned were re-elected.

1886.

The Bye-Laws were prepared and submitted to an Extra-ordinary General Meeting on March 26th, 1886, but, owing to modifications made on the advice of the Privy Council, they were not finally allowed until February 24th, 1887. Though considerable delay had been caused by the suggestions and requirements of the Privy Council, it was recognised that their amendments on most points were advantageous and desirable; whilst on other points the representations of the Council of the Institute were generally acceded.

The First Annual General Meeting under the Royal Charter—the ninth since the foundation—was held on March 14th, 1887, when Prof. Odling, in the course of an Address, dealt with some of the principal Bye-Laws with regard to the constitution and powers of the Council, and referred to a controversy which had been raised in certain journals on the question of professional organisation among scientific men. It was contended by some that it was derogatory in a man of science to pursue his investigations for gain, and that the intention of the Institute was entirely commercial. Prof. Odling said it should be fully understood that the Institute was essentially a professional organisation, having in view professional objects. Although its primary function was not so much the dissemination of scientific knowledge as the assurance of scientific attainment, it was the organisation of a highly scientific profession—probably the most, certainly one of the most, scientific of all professions—and its chief purpose was to ensure and improve the training of those practising the profession, by setting up a high standard of proficiency, and by certifying to the attainment of such a standard on the part of its registered members. It preferred a claim upon all engaged in the profession of chemistry to interest themselves in its welfare, and to make its organisation serviceable to good ends and a means of advancing the profession to which they were attached and of which they felt a

NINTH
ANNUAL
GENERAL
MEETING.

1887.

justifiable pride in being accounted members. He also commented on the relations between teachers of chemistry, and chemists in practice. His views in this connection are interesting and are abstracted below in consideration of the change which has come about with the development of professorial practice :—

PROFESSOR
ODLING'S
ADDRESS.

“ The possession of adequate scientific qualification to enter a profession was one thing, and the maintenance of high scientific qualification to practice the profession another. The first named qualification, as the result of a special prescribed study, could be tested and attested by the Institute ; the last-named qualification was necessarily dependent on a voluntary perseverance in scientific study and a maintained interest in scientific progress. The advances of scientific chemistry were so rapid, and the development of applied chemistry followed so closely on the heels of scientific discovery, while pointing the way to yet further discovery, that the professional chemist, more perhaps than any other professional man, was placed in the happy position of being bound throughout his life to continue a student of science, and a contributor to its advancement. A student, if only for his own sake, he must be ; a teacher he might be, and on many grounds it was desirable that, in some cases, he should be. With but few exceptions—some of them very eminent exceptions—the leading chemists of the country then were the holders of professorial positions ; and would it have been other than a loss to professional chemistry, and to the many great interests committed to the care and judgment of professional chemists, if practitioners and professors had been broadly marked off from one another ? Would it, for example, have been for the public advantage, if Professors Williamson, Frankland, Roscoe, Tyndall, Dewar, and others, had been debarred from affording their professional services to the Board of Trade, to Royal Commissions, to the Judicature, to the Trinity House, to the Home Office, to the Board of Works, to the Board of Inland Revenue, and to other municipal or state departments ? Would it, again, have been for the public advantage, that the chemists exclusively engaged in these and other departments should, in particular cases of difficulty and doubtfulness, have been unable to secure the professional co-operation of their professorial brethren ; that the men eminent for highly specialised knowledge, should in their responsible positions have been refused, from time to time, the desired co-operation of men with a different and wider range of knowledge ? Would it have been for the advantage of the many large interests confided to them that the body of professional chemists throughout the land, constituted a body wholly apart from, and not amenable to the influence of association on an equal footing with, the holders of professorial positions, and recognised leaders of chemical thought in the country ?

“ On the other hand, the gain to professorial teaching and even to investigation, from the occasional engagements of the professoriate in various branches of professional work, would seem not to admit of question. Technical chemistry was the necessary and friendly illustrative of general chemistry ; and such a knowledge of technical chemistry as could only be acquired by the responsible conduct of technical inquiries, was by no means the least essential item of knowledge demanded in professorial teaching. General chemistry, while distinct from technical chemistry properly so called, had this in common

with it, that it comprised a study of all the more important chemical changes taking place or effected, on a large scale, in the different processes of nature and art. It was necessary for the student to complete his chemical education by being made acquainted with these different changes and processes viewed as chemical phenomena; since by their study he was enabled to acquire a far better understanding of the nature and results of chemical change, than he could possibly get by a study of laboratory processes only, conducted mostly on a small scale and with a different object. The teaching of scientific chemistry was not meant only or chiefly for those of independent means, who throughout their lives were to be exclusively students and inquirers; but was intended in large measure for those who were to make their study of the principles of chemistry available for their own needs and directly contributory to the prosperity and productiveness of the country. It was for the professor of chemistry, by that familiarity with technical operations which was attainable only by occasional participation in them, and responsibility with regard to them, to make himself qualified to direct the pupil in his scientific study of technical processes, considered as among the largest and most important illustrations of chemical change. In many ways, indeed, it was for the advantage of those whom he taught, that he should not hold himself aloof from the professional pursuits for which the majority of them were qualifying themselves under his instruction and guidance. The question was not between a teacher fulfilling the special duties of his chair assiduously and earnestly, or perfunctorily and indolently; for among not the least active and renowned of teachers, had been found those largely engaged from time to time, and in one way or other, in professional work. But the question was—assuming the attention of the teacher to be available in some measure for other duties—whether his occasional engagement in the work of technical inquiry was not at least as cognate and professorially improving, as his more or less continuous engagement in the not over edifying work of examinership, secretaryship, directorship, editorship, hack-authorship, and so forth. To be engaged in the profession of surgery, of medicine, of law, of engineering, and of fine art, etc., was an almost essential requirement of the professor of each of these subjects; and to be engaged in the profession of chemistry, could not, it would seem, be otherwise regarded than as a valuable contributory qualification of the professor of chemistry. In support of this position, Professor Odling invited attention to the substance of a letter communicated some time previously by Professor Edward Frankland, to *The Chemical News*. As this letter had been called forth by way of reply to an elsewhere-appearing, alike foolish and rancorous attack on the Institute, to which it was not worth while to accord the importance of more than a passing mention,* Professor Odling had

* An article in *Nature*, published on November 26th, 1885, on "The Whole Duty of a Chemist," commenting on the grant of a Royal Charter to the Institute, charged the new corporation with entirely commercial intentions and protested against the views expressed by its President. While admitting the value of the applications of science to industry and acknowledging the indebtedness of civilisation to scientific progress, the writer professed to recognise no distinction between a profession and a trade or industry, and affected to despise those whose object was to live by their scientific knowledge and ability, questioning whether chemists associated with the Institute—whether holding appointments as professors or engaged in public practice—had any interest in the advance of their science apart from the immediate gain to themselves.

1887.

PROFESSOR
ODLING'S
ADDRESS.

persuaded Professor Frankland to modify the wording of his letter, excluding from it, as far as could be, all animadversion on the little ebullition of editorial pique, to which it was only too serious a rejoinder.

"In common with other great gifts, the power of making important contributions to knowledge and doctrine was, in its very nature, a rare power. Whatever his desires, opportunities, and efforts, it was not given to every one to be a great discoverer; but to every member of a scientific profession it was given to do good and useful work. More especially it was incumbent on the professional chemist to be not unmindful of, nor was he found to be unmindful of, the special opportunities afforded him. By his function and training, he seemed to be of necessity an investigator; since to analyse necessarily implied to investigate. Always indeed should it be borne in mind that the varied work of the professional chemist, in its different degrees of magnitude, responsibility and originality, was essentially scientific work, claiming to be conducted in a scientific spirit. As but few could be in, or near the first rank of discoverers, so neither could many be holders of the first professional positions and doers of the most dignified and highly remunerated professional work; but as it was for the youthful, the little heard of, and the struggling worker to pride himself on belonging to a definite learned profession, including in its ranks the most eminent and revered of his masters in science, so it was for every one, no matter how high his position, who was, or had been, engaged in any way in professional chemistry and took interest in the professional career of his pupils and successors, to recognise the tie which bound him and his fellow-workers together. It was for all alike to acknowledge a mutual claim on each other's consideration and good will, and a common obligation to the now organised profession of which all alike were members."

FIRST
REGISTRAR.

In June, 1887, the Council presented Mr. Charles E. Groves with an honorarium, in consideration of his services in connection with the petition for the Charter, and he was appointed to the office of Registrar in addition to that of Secretary.

CERTIFI-
CATES.

To comply with the provisions of the Charter, it was decided to grant Certificates of membership to the Fellows and Associates, and a Committee was appointed to determine the form it should take; but the matter was not decided until the following year, and Certificates were not actually issued until 1893, when they consisted of the simple statement: "That — A. B. — is registered for the year — as a Fellow (or Associate) of the Institute of Chemistry," followed by the signature of the Registrar. Later, in 1912, permanent parchment certificates were issued instead of the annual form.

TENTH
ANNUAL
GENERAL
MEETING.

The Second Annual General Meeting—the tenth since the foundation—was held on March 1st, 1888, when the Council reported that the roll had increased to 544 Fellows and 45

Associates. Prof. Odling delivered an able Address enlarging on his views with regard to the duties of the Institute under the new constitution, indicating that it was pledged to be subservient to public and not to private ends, while it would rest with the members to determine the position it should take among the professional societies.

After referring to the widespread development of professional chemistry which had taken place during the preceding quarter of a century, he said that certain of the more lucrative branches of professional work were, to a large extent, in the hands of a comparatively small number of members. These, in the main, had assisted in founding the Institute which it was hoped would be of more and more benefit to the profession generally. When it became recognised that professional chemists, whether scattered throughout the country or accumulated in particular centres, were alike members of a definite learned profession; that, in point of character, cultivation, and training they had little or nothing to concede to one another; and that the professional guarantee of conduct and capability was the same for one as for another, it would follow necessarily that much of the work entrusted mostly to a prominent few would become distributed among a more numerous set of persons recognised as belonging to the same corporate body and certified by that body to be no less capable of carrying out the work entrusted to them.

He did not intend to suggest that the higher and more general estimation accorded to the status of the professional chemist, which the action of the Institute was calculated to bring about, would be altogether limited in its effects to members of the Institute. The benefit accruing from its action was not of such a kind that those who declined to associate themselves with the Institute would find themselves wholly excluded from participation therein; but as the joint influence and reputation of the Institute extended, they would undoubtedly find themselves more and more heavily handicapped. Any member of the profession was liable at times to find himself in circumstances of professional difficulty and anxiety—circumstances in which the sympathy and co-operation he was able to claim from those with whom he was associated as a member of a common professional body, were calculated to afford him no little solace; while the consideration shown to him on all hands, by reason of the professional position he was recognised to hold, might even furnish him material support. Having regard, moreover, to the many occasions in which professional chemists had to co-operate with or oppose one another, there could be no doubt that their co-operation was rendered more hearty, and their opposition to one another more temperate and kindly, by the circumstance of their owning a common allegiance to, and taking a common interest in, the professional corporation of which they were alike members.

Prof. Odling also announced that the Council were about to consider the question as to what extent the training of students in private laboratories, could be recognised as affording a satisfactory preparation for the Associateship. Whatever conclusion might be arrived at, it was a matter of congratulation that professors in the universities, colleges, and technical schools, had taken such a warm interest in the progress of the Institute, and had encouraged students to prepare for the examination of the Associateship.

JAMES BELL : PRESIDENT, 1888—1891.

In March, 1888, Dr. James Bell was elected President in succession to Prof. Odling. Dr. Bell had received his scientific training under Prof. Williamson at University College, thereby qualifying as assistant in the laboratory of the Inland Revenue Department, then at Somerset House, becoming Deputy Principal in 1867, and succeeding Mr. George Philips as Principal in 1875. He had been intimately associated with the affairs of the Institute from the foundation and had taken a prominent part in the work of the Council, and, by virtue of his high official position as Principal of the Inland Revenue Laboratory, he had, in some measure, acted as an intermediary for the Institute in its representations to the Privy Council.

CONVERSA- ZIONE.

On June 13th, 1888, Dr. Bell gave a *conversazione* to the Fellows and Associates, at the Marlborough Rooms, Regent Street, combining with the reception an opportunity for bringing together, with the help of Fellows and manufacturers, some forty exhibits comprising apparatus and chemical specimens and the experimental demonstration of some recent discoveries of interest to chemists. From the account of this highly successful meeting and of the exhibits, subsequently published in the *Proceedings*, it would seem that a gathering arranged on similar lines might well be repeated.

OPPOSITION TO THE POLICY OF THE COUNCIL.

At this period a section of the Fellows expressed opposition to certain lines of policy adopted by the Council. They held that professorial and educational interests were represented on the Council more strongly than the interests of the consulting and technological chemists; they disapproved of imposing on candidates for membership a compulsory curriculum of college training; and some were particularly opposed to the restriction of the training of candidates to a selected number of institutions.

In the face of this, the Council insisted on evidence of



(Lombardi.)

JAMES BELL, C.B., D.Sc., Ph.D., F.R.S.
President: 1888—1891.

systematic college training. Many of the members of Council being teachers, they were openly accused of deliberately boycotting private laboratories to swell the number of students in the recognised colleges. The requirement of college training was doubtless a hardship on many candidates so long as the colleges were few, but, during the period which had elapsed since the foundation of the Institute, many new colleges had been established; their chemical departments were being steadily developed, and the difficulty of securing proper training became lessened with the progress of time. The "opposition" did not undervalue the advantages of regular collegiate training; but they held that Associates should be admitted on a broader basis, and that no candidate should be asked where he obtained his knowledge provided he could show that he possessed it. The "opposition" maintained also that the Council comprised too large a proportion of London members. These matters were discussed by the Council and at subsequent meetings of the Institute.

1888.
—

From this time, the *Proceedings* contained fuller information on the work of the Council. In Part III., 1888, the Regulations and Syllabus of the Practical Examination for the Associateship were published in detail, the examinations being then conducted at five centres by a Board consisting of the local examiners acting and reporting jointly.

REGULA-
TIONS AND
EXAMINA-
TIONS.

The general course of scientific training of candidates for admission as Associates to the Institute was laid down as follows: "That he (the candidate) has passed satisfactorily through a course of three years' study in any one or more of the universities or chartered or incorporated colleges or schools, previously approved by the Council, in the subjects of theoretical and analytical chemistry, physics, and elementary mathematics." To this prescribed course of training there was an alternative in the new prospectus, providing that it would be sufficient if the candidate could produce the following evidence:—"that he has been engaged for four years in the practice of chemistry in the laboratory of a Fellow of the Institute, during at least two years of which time he has been entered as a Student of the Institute, and has regularly attended systematic courses of instruction in the

said subjects at such university, college, or school." This provision was tantamount to the acceptance of two years' experience with a Fellow in lieu of one year's training at a recognised college.

The Council also determined that candidates for the examination for the Associateship should be required to produce notebooks containing records of their practical work done during training. Candidates were required to show evidence that they had been trained in certain specified institutions, but further information with regard to the nature of this training was needed by the Examiners, and the production of notebooks supplied this want. Although this regulation did not come into force until 1890, several candidates for the examination held in July, 1889, sent in such records, duly authenticated, and received credit accordingly. The submission of practical notebooks at examinations in chemistry has since been required by other examining bodies, and the notebooks submitted have considerably assisted Examiners in deciding the ability of candidates.

Formerly, each examiner acted individually, and examined the candidates on the general lines of the syllabus approved by the Council, reporting at the completion of the examination, to the Examination Committee, and giving details as to the results arrived at by the candidates, with an opinion as to the manner in which each had executed his work. The Committee, after carefully considering the reports of the different examiners, decided whether the several candidates had done their work satisfactorily, and were entitled to be recommended for election. Under this system, the exercises given were practically left to the independent judgment of the examiner, as he was merely limited by the general terms of the syllabus. In the absence of consultation and co-operation between the examiners, it was found that there was a want of uniformity in the test applied, and consequently that method of conducting the examination was not satisfactory.

After careful consideration, it was decided that the examiners should cease to act independently, and that, in future, the examinations should be conducted by a Board of five examiners, under definite regulations prepared by the Council,

subject to modifications from time to time as occasion might require. The Board of Examiners thus constituted had to set the exercises for the candidates, and the examiner at each centre was required to furnish the Board with a detailed account of the work performed by each candidate. The local examination system had been continued until 1887, when the examination was held in London only; but the examinations in July, 1888, were carried out at Birmingham, Glasgow, London and Manchester, under the control of the new Board, nineteen out of twenty-two candidates being successful.

Applications for membership were occasionally received from foreign chemists, but the Council decided, in April, 1888, that it was inexpedient to consider the claims for admission to the Institute, without examination, of candidates practising outside Great Britain and Ireland, British Possessions and Colonies, unless such chemists were British subjects.

Among the many questions discussed in the same year was that of the desirability of forming a benevolent fund for the widows and orphans of members, and, perhaps, for assisting the aged and infirm, and other necessitous cases. A circular was sent to each of the members asking whether they were in favour of the establishment of such a fund; only 172 replied and of these 130 were in favour of the scheme. It was considered that such a fund could only be successful if supported by a majority of the members, and the matter was allowed to drop.*

1888.

BENEVO-
LENT FUND.

At the Third Annual General Meeting—the eleventh since the foundation—held on March 1st, 1889, the Council reported that the roll had increased to 685 Fellows and 83 Associates—an aggregate of 768 members. The policy of admitting qualified chemists other than those who had been duly

ELEVENTH
ANNUAL
GENERAL
MEETING.

* The question of forming a Benevolent Fund has been raised informally in subsequent years, and although the Institute is precluded under the terms of the Charter from contributing to such an object—since certain clauses are held to forbid it—its officers have been able to assist members in temporary distress and, on several occasions, the widows of members have been helped substantially by private benevolence. Similar funds are doing much good in connection with other institutions, and many Fellows have expressed their willingness to support a suitable scheme; so it appears probable that the Council will consider the matter in the future.

1889.

ELEVENTH
ANNUAL
GENERAL
MEETING.

examined had been still continued, though not without strict investigation of their qualifications. This procedure, however, could not be extended—save only in very exceptional cases—beyond a limited period, which had now been determined, and from this time, therefore, election without examination was of comparatively rare occurrence.

EXAMINA-
TIONS.

At the Examinations held in July, twenty-six candidates presented themselves at four centres: Birmingham, Glasgow, Manchester and London; of these, twenty satisfied the Board.

REGISTERED
STUDENTS.

In 1889 the Council formulated a scheme for the registration of Students both in recognised institutions and in the laboratories of Fellows. This step had been contemplated as early as April, 1883, but temporarily postponed. There was, at that time, no regulation requiring candidates for such registration to pass any preliminary tests of general culture. The Council required that they should be at least seventeen years of age and that they should be recommended by a professor of chemistry in a recognised institution or by a Fellow of the Institute, from personal knowledge, as suitable prospective members. It was considered desirable that such students should come into touch with the Institute at an early stage in their preparation for their profession and also that Fellows of the Institute should encourage them to prepare for the examinations on the lines prescribed in the Regulations of the Institute.

CONFER-
ENCES.

The Institute was becoming a more powerful and representative body of scientific opinion, but it was felt that the organisation would be stronger if more frequent opportunities were afforded for the members to meet to discuss subjects of mutual interest. Dr. Bell was very anxious to revive the Conferences and to have them reported for the information of the Fellows and Associates generally.

In November, 1889, the Conference Committee submitted a report to the Council embodying a definite scheme for holding periodical conferences in order to bring the members into frequent intercourse, and as a means of advancing professional interests in a more practical and efficient manner than was possible while the Institute restricted its activity solely to the exercise of its examinational and diploma-granting functions. The subjects which suggested themselves

for discussion were: the training of students; the status and conduct of the professional chemist and his relations towards individual clients and public authorities or corporations; and the actual work of the analytical and consulting chemist—such as the description and consideration of new methods of analysis, and the inferences to be drawn from analytical data. The following is an abstract of the remainder of the report:—

1889.

The Committee had not lost sight of the fact that there were other CONFER-
bodies which dealt with some of these subjects either as incidental ENCES.
or as essential parts of their work. The Chemical Society from time to time discussed analytical processes, but usually only in their relationship to *purely scientific* as distinguished from *applied* chemistry. Papers relating to the analysis of technical products were often read before the Society of Chemical Industry, but the Society was mainly concerned with *manufacturing* rather than *analytical* processes. The Society of Public Analysts devoted itself wholly to the discussion of professional matters and, in the opinion of the Committee, its meetings suggested to some extent the kind of Conferences which would be useful to the Fellows and Associates of the Institute.

The objects of the Society of Public Analysts, which had been THE SOCIETY
founded in 1876, were:—the promotion and maintenance of the OF PUBLIC
efficiency of the laws relating to adulteration; the promotion, and ANALYSTS.
as far as possible securing, of the appointment of competent public analysts; and the improvement of the processes for the detection and estimation of adulterations, the securing of uniformity in the statement of results, and the holding of periodical meetings for the reading and discussion of original papers on chemical and microscopical analysis with reference to the detection of adulteration. Originally the papers read before that society related chiefly to the analysis and adulteration of food and drugs; but gradually, as the methods of food analysis became improved, the scope of the society became wider, and papers were discussed at its meetings relating to all kinds of analytical work. Its membership was not restricted to those holding office under the Sale of Food and Drugs Act, but was open to all practising analytical chemists. Nevertheless its title, and the large predominance of food analysis in the matters considered at its meetings, at once stamped it as narrower and more special in its scope than the Institute. Highly important and useful as had undoubtedly been the work of the Society of Public Analysts, the Committee did not feel that its monthly meetings were in themselves sufficient to attract as wide an interest in the profession as they would have liked to see awakened by the proposed regular meetings of the Institute. On the other hand, such matters as were discussed at the meetings of the Society of Public Analysts were precisely of the nature which the Committee considered might be discussed by the Institute; and it appeared to the Committee that the holding of a series of meetings parallel, as it were, to the monthly meetings of the Society of Public Analysts, would involve some waste of energy, and to some extent jeopardise the success of both.

This led the Committee to suggest to the Council an enquiry as to whether it might be possible for the Institute to take up the work hitherto carried on by the Society of Public Analysts, and to hold,

1889.

THE SOCIETY
OF PUBLIC
ANALYSTS.

in place of the meetings of that Society, frequent meetings and conferences, which should deal with all matters at present discussed by the latter, and at the same time open much wider and more general ground. Most of the original objects of the Society of Public Analysts had been to a great extent realised. The work of that Society might now be regarded as falling within the legitimate scope of the functions of the Institute, and general and material advantage, both to public analysts and to the profession at large, would ensue if the smaller society could be induced to merge itself in the larger. In that case, in order to secure due attention to the large and important body of public analysts and other officers holding appointments under laws involving chemical or analytical work, such as alkali works inspectors, gas examiners and the like, a standing Committee of the Council of the Institute should be formed—say, a *Committee on State Chemistry*—which should watch over and deal with matters affecting the relation of the professional chemist to all government departments, corporations, and public authorities of all kinds, and with any chemical matters arising out of Acts of Parliament. This Committee on State Chemistry, while having wider functions, should carry on the duties that were at present performed, for one section of the profession, by the Council of the Society of Public Analysts.

JOURNAL.

With very rare exceptions, the members of the Society of Public Analysts were already members of the Institute. It was clear that the institution of Conferences, accompanied by such an absorption of the smaller body by the larger, would involve the issue by the Institute of a "Journal" or "Proceedings"; and this journal might contain not only the official transactions of the Institute, but also general analytical information from all sources, supplying a want that had not hitherto been satisfactorily filled in this country. A preliminary inquiry into the probable cost of such a journal had been undertaken, and the Committee had ascertained that the cost of printing 1,000 copies of a journal of 240 pages, of the size of the *Society of Arts Journal* would be about £225. The Committee with a view to the institution of Conferences, and in consideration of the points above discussed, recommended that the Council should request the President of the Institute to confer with the President of the Society of Public Analysts, with the view of ascertaining whether such a fusion of the aims and interests of both bodies was likely to commend itself to the members as practicable, and as of mutual advantage.

The Report was received, and the Presidents of the two bodies conferred, but the proposal contained in the last paragraph fell through.

TWELFTH
ANNUAL
GENERAL
MEETING.

At the Fourth Annual General Meeting—the twelfth since the foundation—held on March 1st, 1890, the Council reported that the roll of members included 685 Fellows and 83 Associates; in all 768. The net increase for the year was thus only 13; but it was realised that membership being now almost exclusively restricted to candidates who had passed the examination, the growth of the Institute, numerically, could not be very rapid.

FINANCES.

The Council in their annual reports had repeatedly

congratulated the Fellows and Associates on the satisfactory financial position of the Institute; but, with a margin of income over expenditure usually of £350 or more, it has been questioned whether the Institute would not have benefited to a greater extent had the Council, at this period, ventured a more substantial outlay on the development of its activity. The policy of accumulating funds, however, enabled the Council to save some £7,000 in fifteen years and this reserve was of real assistance when the Institute moved into its own premises, a proposal which was now contemplated, though it was not immediately taken in hand. The Institute still occupied the offices at 9, Adelphi Terrace—part of the premises of the Royal Statistical Society—and still continued to hold their meetings in the rooms of the Chemical Society of Burlington House.

1890.
—

Dr. Bell raised again the suggestion of publishing a journal, JOURNAL. but his views did not receive general support: it was not considered practicable without increasing the amount of the annual subscription of the members.

In July, 1890, examinations were held at six centres—BIRMINGHAM, GLASGOW, MANCHESTER, LEEDS, LIVERPOOL and LONDON—at which forty-three candidates presented themselves, all passing, as stated in the report of the Board of Examiners, "in a satisfactory manner"—a circumstance which gave rise to some comment, though the Council were confident in the justice of the result in view of the detailed report of the Board. EXAMINATIONS.

In Part III. of the *Proceedings*, 1890, the Council made more definite the regulations with regard to the training of Students in the laboratories of Fellows of the Institute, stipulating that every such candidate should produce evidence that he had been engaged for four years in the practice of chemistry in such laboratory, during at least two years of which time he had been entered as a Student of the Institute, and had regularly attended systematic courses of instruction in theoretical and practical chemistry, physics, and elementary mathematics, in any one or more of the Universities or chartered or incorporated Colleges or Schools approved by the Council. REGULATIONS.

1891.
 THIRTEENTH
 ANNUAL
 GENERAL
 MEETING.

At the Fifth Annual General Meeting—the thirteenth since the foundation—held on March 2nd, 1891, the Council reported an increase of 32 members, the roll numbering 690 Fellows and 123 Associates. The Council also reported the appointment of a Committee on State Chemistry, with duties similar to those of the Parliamentary Committee referred to in the earlier part of this history, and, acting on their advice, made representation, from time to time, to various Ministers of State and officials, with reference to matters affecting the public interest and the promotion of the welfare of professional chemists appointed in connection with the administration of various statutes, such as the Sale of Food and Drugs Act, in which Fellows of the Institute were directly concerned.

Dr. Bell, in delivering his third presidential Address, stated that his proposals as to the publication of a journal and the holding of more frequent meetings, which he had advanced at the previous Annual General Meeting, had been considered by the Council. It had been practically decided that the Institute should remain chiefly a qualifying and registering body; but it had been agreed to hold two sessional meetings in each year for the consideration of subjects of interest to professional chemists.

The Regulations were still much discussed by the Council and many modifications were suggested, some members contending that a student should be allowed to obtain training solely in the laboratory of a Fellow, a view to which the majority of the Council were decidedly opposed, though they were prepared to accept, as already stated, two years training and experience with a Fellow in lieu of one year at a recognised institution. It was made quite clear, however, that no evening classes would be recognised. Dr. Bell said that although the Institute was not in a position to offer any exclusive right to practice, he felt confident that the Fellowship of the Institute would become sooner or later a necessity to the professional chemist. With the daily growing importance of chemistry to the public, a guarantee that persons entering the chemical profession possessed both a practical and scientific knowledge of their work, would become, in time, a necessity.

Continuing, he said:—"There had been a feeling that the Institute had not taken proper steps to keep in touch with the Fellows, and that it had largely neglected one of its functions to look after the personal interests of professional chemists. It was difficult to say how far the Institute had been at fault in this respect, but the Council had always shown the greatest desire to assist Fellows in cases where they could see their way to interpose usefully. It should be the function of the Institute to lend its moral support to Fellows in maintaining their rights, and to advise and assist them in matters of difficulty. The Institute should also co-operate with Fellows in watching and scrutinising the different appointments of public analysts or chemical advisers made by the County Councils, Corporations or other public bodies, so as to prevent as far as possible chemical posts being filled by unqualified men to the prejudice of properly qualified candidates."



[Whillock.]

SIR WILLIAM AUGUSTUS TILDEN, D.Sc., LL D, F.R.S.
President: 1891—1894.

WILLIAM AUGUSTUS TILDEN: PRESIDENT, 1891—1894.

Dr. Bell was succeeded in the presidency by Prof.—now, Sir—William Augustus Tilden, who, like Sir Frederick Abel and Prof. Odling, had been a student under Hofmann. He had also worked in the research laboratory of Dr. Stenhouse, and, after holding the position of Lecturer at the School of the Pharmaceutical Society for seven years (1863—1870), had been Senior Science Master at Clifton College, where he remained until 1880, in which year he was appointed to the Chair in Chemistry at Mason Science College, now the University of Birmingham, which he held until 1894, when he was appointed Professor of Chemistry in the Royal College of Science, London.

1891.

In pursuance of the decision of the Council, the first of the new Conferences was held in May, 1891, the meetings extending over two days. Four papers were read and discussed, viz.: "On the Relation of the Chemical Society to Professional Chemistry," by Dr. Odling, F.R.S.; "The Analytical Chemist in Relation to the Public, the Profession, and the Institute," by Mr. Otto Hehner; "On the Training Requisite for Professional Chemists," by Dr. C. R. A. Wright, F.R.S.; and "The Best Training for an Analytical Chemist," by Mr. F. J. Lloyd.

No report of the proceedings at these meetings was published, but, from existing notes, it has been gathered that, arising from Prof. Odling's paper, there was on this occasion considerable debate with reference to the use of the letters "F.C.S." It was remarked that persons who had no definite qualification for practice had secured admission to the Society solely to be able to use the letters; that the public had come to regard them as a professional qualification; and that the interests of the Fellows of the Institute were thereby seriously affected.

The discussion is of interest in view of the desire of the Council to make the Register of the Institute free from all ambiguity as to qualifications of the Fellows and Associates. Already, in March 1891, the Council had resolved that no Degree should be inserted without the name of the University granting it being annexed, and that no Degree or qualification should be inserted unless it were shown to be genuine.

1891.

CONFER-
ENCES.

Later, in January, 1893, the Council—as will be shown—dealt with the question of including letters indicating membership of societies.

From the remarks made on the other papers, there appeared to be a strong impression among practising chemists that professors of chemistry held a predominant position in guiding the affairs of the Institute. They contended that the Institute was founded mainly in the interests of the analytical and consulting chemists and complained that in the education of chemical students the professors appeared to minimise the importance of analytical practice.

Prof. Tilden said that it would be very difficult to maintain a hard and fast division between professorial and professional chemists, and he deprecated any conflict between branches of the profession. The Institute had not been founded for the benefit of the analytical chemist only. The term “analytical and consulting chemists” was used in the Charter chiefly to distinguish such chemists from the pharmaceutical chemists and druggists. The Institute was intended to embrace the whole profession.

In discussing the training of chemists, it was held by some that as the London University had done great work in the promotion of general scientific education, without insisting on enforced curricula in certain institutions, the Institute should find a means of thoroughly testing candidates without regard to the training they might have received. All were agreed that a good knowledge of chemistry, both theoretical and practical, and allied sciences was essential, but they differed as to the best means of obtaining such knowledge. It had been the experience of some, that as students they had been allowed to waste their time and do just as they pleased while the professor was engaged elsewhere. They had been turned out insufficiently trained and left to obtain their knowledge as best they could—obviously a system destructive of the best interests of the profession. Professional chemists who made a practice of taking pupils and putting them through a specific course objected to the requirement that candidates for the Associateship should spend at least two years at a recognised college. In consequence of this Regulation, men who had been entirely trained in private laboratories and had since been engaged in the practice of their profession, were debarred by the Regulations from obtaining the Associateship. However, it was pointed out that men trained otherwise than in recognised institutions could obtain admission to the Examinations of the Institute on taking the degree of B.Sc. of London University. Some members questioned the reliability of the work performed by pupil assistants and the morality of supplying their results to clients; and asserted, moreover, that laboratories where professional work was entrusted to unpaid and inexperienced pupil assistants were often associated with the charging of inadequate fees.

The opinion was also expressed that college training and associations should not be undervalued; the training, of course, should be clearly defined and properly carried out, but in any case, it was hoped that college associations would be an important, if not the most important, element in putting an end to unprofessional conduct, as there was nothing so valuable in raising the status of the profession.

There seemed to be a general consensus of opinion that the standard of the Associateship examination should be raised, since the examination should be a real test in order to secure a high class of professional man. The examiners should be able to determine whether the candidates had so profited by their training as to have formed a sound basis

on which to build experience. After election to the Associateship, the candidates had to be engaged in the practice of their profession in some manner satisfactory to the Council for at least three years before election to the Fellowship.

The meeting was certainly effective in "clearing the air." There was much to be said on both sides. Professors were ready to recognise the claims of professional chemists to take part in the training of those who wished to devote themselves to specialised analytical work, but they deprecated early specialisation and maintained that the three years' course of college training for the Associateship was no more than sufficient to lay the bare foundations of chemical training. To give this general training was the normal duty of the professorial teachers, who thought it would be absurd to introduce specialised analytical work into the examination for the Associateship as then conducted. The examiners, whether professorial or other professional chemists, should be the best procurable judges of this general analytical training. Representatives of both sides expressed themselves anxious to work hand in hand for the general good of the profession, bearing in mind that they had the same objects in view, and were in their several ways endeavouring to make chemistry available for the practical needs of the community.

In the following year, a special Conference was held on the subject of training, to which reference will be made in due course.

Under the guidance of Prof. Tilden, the Council gave further consideration to the conditions under which Students, Associates and Fellows should be admitted to the Institute. It was felt that nothing but complete reconstruction would provide a scheme in which administrative difficulties would be reduced to a minimum and a standard maintained which would be creditable to the Institute.

At the examinations held in July of the same year, twenty-two candidates were examined at four centres—Birmingham, Dublin, Glasgow and London—and twenty satisfied the Board.

In December, 1891, the second Conference "On the Ethics of Professional Certificates" was held. The subject was introduced by the President, Prof. Edward Frankland, Mr. Michael Carteighe, and Mr. Charles E. Cassal. The meeting was well attended and an animated discussion followed, but no report was published, for the reason that the Council regarded this and the May Conference as tentative in their character and as an endeavour to ascertain in some measure the views of the general body of members on the subjects submitted for consideration.

The majority of those present at the December Con-

1891.

1891.
CONFERENCE.

ference were distinctly opposed to the indiscriminate giving of certificates for publication, and in favour of a censorship being exercised over the issue of certificates for the purpose of trade advertisement. One or two, however, contended that the Institute should not interfere with the liberty of its members in such matters, holding that commercial men and firms had a right to obtain certificates and to use them, provided they consisted of *bonâ fide* reports on matters of fact and inferences fairly deducible from them. It is well, in this connection, to note that legal cases which have arisen from time to time appear to have decided the point that a person for whom an investigation is made is not necessarily entitled to publish the report in the absence of a distinct agreement to that effect; so that members whose certificates may be published without authority may have a right to restrain such publication. Thus, in a case heard at the Westminster County Court on May 1st, 1901, the judgment of Vice-Chancellor Malins in *Lytton v. Devey* was quoted as follows:—

“ In my opinion the law upon the subject is plain, and has existed long before the case of *Pope v. Curl* was decided, and has existed ever since—namely, that the property in letters remains in the person to whom they are sent. The right to retain them remains in the person to whom they are sent, but the sender of the letters has still that kind of interest, if not property, in the letters which gives him a right to restrain any use being made of the communications which he has made in the letters so sent by him. I will not have it supposed that I entertain a moment's doubt about that being the settled law.”

REGISTRAR
AND
SECRETARY.

Early in 1892, Mr. Charles E. Groves retired from the offices of Registrar and Secretary, the Council expressing their high appreciation of his long and valuable services and of the conscientious, careful and courteous manner in which all his official duties had been discharged. Mr. Groves was nominated as a Vice-President in the new Council, and was duly elected at the Annual General Meeting, in March, on which occasion his successor, Mr. George Henry Robertson, was formally introduced.

FOURTEENTH
ANNUAL
GENERAL
MEETING.

At the same Annual General Meeting—the sixth since the Charter (fourteenth since the foundation)—the election of the Council was seriously contested, and the scrutineers were unable to report until the advice of counsel had been sought with regard

to the right to vote of members whose subscriptions for the year were in arrear.* However, at an adjourned meeting, the officers and Council as nominated were declared duly elected, the disputed votes being held to be valid. When the Bye-Laws were subsequently revised, in the following year, the right to vote was restricted to members who had paid their subscriptions before the date of the Annual General Meeting.

On this occasion also, it was resolved, on the motion of Mr. Otto Hehner, that it be an instruction to the Council to submit a scheme or schemes for admission of candidates to membership to an early General Meeting of the members.

Prof. Tilden's first presidential address bears evidence of his determination to use his endeavours towards the general advancement of the affairs of the institute, and is of such interest and importance that it has been deemed desirable to reproduce in this volume a fairly full abstract.

He indicated that the time had arrived for the Fellows to come to an agreement not only with regard to the course of training which should be imposed upon candidates for admission to the Institute, but also with regard to matters concerning their conduct as professional men. In a body consisting of elements so diverse, representing various interests, necessarily looking at questions from different points of view, and recognising different ethical standards, some division was to be expected; but there should be an attempt towards greater unanimity. Some contended that the Institute had been created for analytical and consulting chemists alone and that all official chemists, teachers, industrial chemists and manufacturers—even though they were unavoidably also consulting chemists—should be suffered to take no part in its affairs. As a matter of justice and of policy, no such division was possible; it was obvious that the only sure source of strength and stability was the incorporation of all members of the profession who sought to make a living by their knowledge of chemistry, provided that they were properly qualified. The professors, as a matter of fact, enjoyed the confidence of the public and were constantly liable to be called upon to act as advisers in connection with matters of public importance, and thus became, at any rate *pro tem.*, consulting chemists. No agitation, either within or without the Institute, was likely to induce the Government or municipal corporations, or the public to abandon those sources of advice and assistance when occasion arose, and even in the contingency of the Institute obtaining exclusive powers, it was not persons of that class who would or could be debarred from practice. He

PROFESSOR
TILDEN'S
ADDRESS.

* The opinion of counsel was to the effect that any member might sign and return a balloting list, but that any member who had not paid his subscription was not entitled to vote on any motion. On the advice of the solicitors, the President ruled that only those papers were invalid which contained more than the proper number of names, or which for any reason produced an ambiguity in the minds of the scrutineers as to the intention of the voter.

1892.

PROFESSOR
TILDEN'S
ADDRESS.

also ventured to ask what prospect there would have been of the Institute receiving a Royal Charter, without the influence and efforts exercised by distinguished men of the professorial class, the influence of whom within the Institute it was then sought to minimise. Professors of chemistry, as a body, held an unassailable professional position; their character and income were alike independent of connection with the Institute, and they derived less direct advantage from the existence of the Institute than any other class of its members. If the objections expressed by some of the rank and file to the importance which was attached to the opinions upon technical questions of such men as Profs. Frankland, Odling, and Dewar (to whom he tendered his apologies) was based upon the discovery that they could not command fees calculated upon the same scale, that was a matter in which no reconstruction of the Institute would help them. Such men as those he had named would stand in an eminent position whether professors or not, whether members of the Institute or not. But if, as the result of any ill-advised attempts to transfer the conduct of affairs from the hands of more eminent to those of less eminent members, the Institute was deprived of the countenance and co-operation of the professors in the universities and colleges throughout the country, so much the worse for the Institute and for the professional position of the entire body of members. The social rank of any profession depended far more upon the public estimation in which those who were at the head were held, than upon the average position of the members collectively.

Referring to the training of chemists, Prof. Tilden said there were still people who pretended to think that it was possible to make a chemist without teaching him chemistry, who seemed to affirm that the repetition of a small number of operations in qualitative or quantitative analysis, without a systematic and graduated course of instruction in the philosophy of the science, and in allied branches of physics, was sufficient to qualify a man for the discharge of the duties which fell to the lot of a consulting chemist, duties in which the possession, not merely of a knowledge of facts but of trained powers of observation and a cultivated judgment was indispensable for the formation of opinion the expression of which might involve very serious consequences to the client. In other professions the system of apprenticeship or private pupilage was either abandoned, as in the medical profession, or in process of modification, as among lawyers and engineers. But, even if the Institute had not the example of other professions, it was only necessary to consider a few facts to perceive the soundness of the principle now repeatedly affirmed by an overwhelming majority in successive councils of requiring a specified course of study, in a properly equipped collegiate institution, as the basis of the training to be undergone by all our Associates before admission. In the British Universities and in the University Colleges of the new type, spacious laboratories were provided with appliances and apparatus for the purposes of teaching. The teachers were men who had themselves passed through a long and severe course of study and training preparatory to the work to which they devoted practically the whole of their time and thought. In those Institutions everything proceeded under public observation, and they were practically open to inspection by all comers. It seemed idle to contend that every Fellow of this Institute was in a position to offer instruction in chemistry comparable in efficiency with that which was offered by the universities and colleges recognised by the Institute. He knew that there were many private laboratories which were most admirably equipped and were conducted by chemists of

acknowledged ability, but the equipment of such laboratories was not designed for the purpose of teaching, and the principal whose practice was worthy of the name had other uses for his time. On the other hand he had known of miserable little dens, miscalled laboratories, where the proprietors were glad to get water for analysis at 7s. 6d. and to determine carbon in steel at 9d. a sample. Was it to be maintained that the pupil was likely to learn as much of chemistry at these laboratories as in a college properly designed and furnished? He was inclined to believe that the list of places of instruction to be recognised by the Institute would probably be extended, and it might come to pass that this augmented list would include some private laboratories. He saw no objection to that, provided guarantees necessary for the protection of the pupils and for maintaining the character of the Institute were forthcoming. These guarantees would necessarily partake of the character of those which were afforded by all the public institutions then upon the list: in his opinion, the Council would never be justified in recognising as a properly qualified place of instruction any laboratory which was not prepared to fulfil such conditions as the following:—First there should be a definite programme or syllabus of instruction to be given by properly qualified teachers; secondly, there should be evidence of proper equipment in the form of space, apparatus and material; and thirdly, every one of the recognised places should be as freely open to inspection as were the institutions which at that time found a place on the list. He asked whether under any circumstances the Council could reasonably look forward to a time when every Fellow of the Institute would be qualified to teach scientific chemistry. He said *scientific* chemistry advisedly, because, however restricted and technical might be the practice in which the chemist, when qualified, expected to be engaged, he would never make a competent professional man without a sound scientific education. The principles of the science having been duly mastered, he was quite ready to express respectful admiration of the ingenuity displayed in the little tricks and dodges which often constituted factors so important in successful analytical processes. He was even prepared to go further and admit that there were many things connected with technical and analytical chemistry which could only be learned properly in a properly organised technical laboratory; but to maintain that processes should be learnt first and that principles should be allowed to take care of themselves was about as true as that to learn bricklaying was sufficient to make an architect. The profession of chemistry did not at that time attract a fair proportion of the educated class of young men who flocked into the other professions of law or medicine. The general education of the aspirants to the Associateship was too often defective, and he believed that this was more frequently a source of discredit to the profession of the analytical chemist than actual lack of technical knowledge. He was very anxious to see this remedied, and he had long been of opinion that young men should not be admitted without giving substantial evidence of possessing a fair English education. This was the basis of one provision in the new scheme of examinations referred to in the Report of the Council, and he trusted that, in the course of the ensuing year, the scheme would be brought into harmony with the provisions of the Charter.

Referring to the Conferences which had lately been held, Prof. Tilden said that he could not help thinking that the majority of those who were present at the December meeting would be in favour of a censorship to be exercised by the Institute over the issue of pro-

1892.

PROFESSOR
TILDEN'S
ADDRESS.

professional certificates given for the purposes of advertisement. He thought it was a gratifying indication of the general feeling of the assembled members that there was not one who had a word to say in defence of the testimonials which some chemists had issued. He thought that was a subject which might well occupy the attention of the Council, but no enactment concerning that or any other subject was likely to be operative without cordial loyalty on the part of the members generally.

Prof. Tilden suggested that the Fellows could do something more to emphasize the significance of the letters F.I.C. They should not be associated with letters indicating no professional qualification. The letters to which Fellows alone were entitled represented a professional stamp, obtainable only after protracted training and searching examination.

CONFERENCE
ON REGULA-
TIONS.

On May 16th, 1892, a Conference was held on "The present Regulations with respect to the Admission of Fellows and Associates to the Institute"; the President in the Chair. The discussion disclosed considerable divergence of opinion, and the meeting served a useful purpose in that it afforded the Council, to whose consideration the subject had been formally referred by the Annual General Meeting, an opportunity of hearing the views of other members who took an interest in the educational work of the Institute, before deciding their course of action on a matter of supreme importance to the profession.

Prof. Wertheimer (Bristol) advanced the opinion that the Council had been too restrictive in the recognition of institutions for the training of candidates for the Associateship. This operated unfairly on a number of technical schools; he was in favour of raising the standard of the examination and of allowing any candidate to present himself wherever he might have obtained his knowledge and experience.

A paper was read from Mr. C. T. Kingzett, advocating similar views.

Mr. David Howard, on the other hand, held that the Institute should ensure that its members had been thoroughly and systematically trained. If any alteration were made in the curriculum, the Council should require an increased range of knowledge rather than one more restricted: a chemist should have a really liberal education, and those who were to be professional men should be trained above the average. The task of the Institute was to raise the standard of their education; any step which tended to diminish the standard of academic as well as practical work of candidates for the Institute would be a fatal mistake.

Dr. Stevenson Macadam (Edinburgh) spoke in favour of systematic training, but he thought the list of recognised institutions should be extended. The Council should retain the power of admitting under special circumstances—not by a general rule—any candidate who could show that he had systematically studied his subject, even privately, and had so prepared for the examination.

Prof. Edward Frankland endorsed the views expressed by Mr. Howard. He said, in effect, the question was so important that the

view of the Institute on this matter would determine the future status of chemistry as a profession. The want of general training on the part of a large number of chemists who had come into the profession ten to twenty years ago, had been a great disadvantage to the profession. It was impossible to test all qualities necessary for professional life by examination. In a profession like that of chemistry, examination solely would be an exceedingly defective instrument. The Council ought always to keep in view the necessity of a thorough general education, of a thorough training in chemistry, in physics and, to a certain extent, mathematics.

Mr. Otto Hehner agreed with Prof. Wertheimer and Dr. Stevenson Macadam. He did not see how the mere attendance at a university could make a man a professional man; in other professions for which candidates were trained in the universities, there were men who took different views of professional conduct, and he failed to see how the Institute could cope with unprofessional conduct by insisting on training in particular institutions. It was necessary to ascertain that the candidates were well trained, but where this knowledge was obtained it should be a matter of indifference to anybody.

Mr. R. J. Friswell, speaking as a chemist employing other chemists, said that he could look at the question from the view of the general public. The Institute had been granted a Royal Charter for special purposes. Looked at from within, some might say that it was in order that chemists might form a close profession; looked at from without, the public would say that it was to collect together a body of men who could be consulted with confidence. He thought the Institute should introduce such a wide standard of training as should satisfy the general public that when they went to a consulting chemist they were not going to a man of narrow knowledge of one or two particular processes or even of particular sciences; the Institute should be composed of really professional capable men of affairs.

Prof. Arthur Smithells (Leeds), referring to the recognition by the Council of certain institutions, said that he thought the Council should be careful in deciding between those which should be accepted and those which should be excluded. There was something indefinable about an institution of a right type which gave it rank and gave confidence in it as an institution from which the Council could receive students, feeling that they had received the training of the character demanded by the general spirit of the Charter and the general wishes of the Institute.

Mr. John Stevenson advocated the recognition of large works laboratories, especially if under the direction of Fellows of the Institute, and that besides the general practical examination for the Associateship candidates should be examined in a special branch. The chemical works throughout the country might be divided into some twenty or thirty different classes, something like the classification adopted in the Journal of the Society of Chemical Industry, and special examinations might be held in these different divisions. One might have several samples of oils given to him to ascertain what they were; another might be examined in steel or iron, or in alkali, so that the specialist could show his skill in that particular branch, and if he passed creditably it might be stated in his certificate. Most employers thought far more of a man's special experience, efficiency and skill in the particular subject in which he was interested. They all wanted to keep up the standard of the profession, and to have general training, but he thought it could be very well arranged for in the examination. Reforms of this kind might be introduced without in the slightest degree deteriorating the standard.

1892.

CONFERENCE
ON REGULA-
TIONS.

Mr. Alfred H. Allen (Sheffield) said it was very desirable that chemists should have as wide a training as possible both in chemistry and collateral sciences and of the arts; but he thought that it did not necessarily follow that he was not able to do his duty to the public unless he had such a training. To insist on the training being taken in certain institutions was preposterous.

Mr.—now Col.—Charles E. Cassal expressed his doubts as to the advisability of allowing every Fellow to have the power of training students fully in every respect for admission to the examination. He held that it was not possible to institute an examination which would thoroughly test the fitness of a man to practise as a professional chemist. Before election to the Fellowship, he would suggest that an Associate should show that he had been trained in a laboratory known to be one in which *bonâ fide* analytical chemistry was practised, and should be examined in the work in which he had been so engaged. The list of recognised institutions should be extended, and large public laboratories should be approved. The Institute no doubt existed for the benefit of the public, but it also existed for that of the Fellows, and they would not benefit by making it more easy for all sorts and conditions of people to become qualified.

The President said that there appeared to be a consensus of opinion in favour of raising the educational qualification of candidates rather than the technical qualification. The Institute really wanted a class of young men coming forward who had received a better education than those who had been preparing for the profession of chemistry in the past. That was the object of the course of training imposed by the Council, and he thought rightly imposed. The profession had suffered very much in consequence of chemistry being taken up by imperfectly educated persons who had become specialists in a kind of way, who had learnt to perform a considerable number of operations which were of technical importance, and had thereupon felt entitled to be regarded as professional chemists; but the Institute wanted in future to get men of a superior stamp to take up chemistry and adopt it as their profession. Some of the speakers seemed rather inclined to the view that the Council ought to take pity on the crowd of unfortunate people outside who had no profession, and who were doing their best to get into theirs, but he did not consider the Charter was given to the Institute for any such purpose. One of the provisions he hoped to see introduced into the new scheme was the requirement that every candidate for the Associateship should show evidence of a broad general education: and that he should have passed some qualifying examination such as was demanded of aspirants to the medical or legal professions. From his experience of the large body of young men who came to him to learn chemistry, he had felt that the great want was a better general education to start with. If they possessed that they would be in a much better position to take up chemistry and make good professional men fit to rank alongside their brethren in other branches of professional life. He was quite sure that those members of the Council who had been present that day would take all that had been said to heart, and it would no doubt influence them in the future discussions at the Council table with regard to this very important matter. He hoped the profession of chemistry would not in future be regarded as so remarkably easy of access as it then appeared.

REGULA-
TIONS.

The Conference was duly reported and published, and the Council proceeded with the preparation of the new Regulations,

which were published in October of the same year, with notice that they would come into force in October, 1893, subject to reservations in favour of students and Associates registered prior to that date.

1892.

In May, 1892, the Council forwarded a communication to the Local Government Board urging the importance, in the interest of the public, of selecting for appointment as public analysts only such persons as could give evidence of possessing sufficient knowledge and skill in chemistry and microscopy ; and that, in order to secure those qualifications, it was desirable to appoint Fellows of the Institute who had obtained practical experience in the analysis of food and drugs in the laboratories of public analysts or other chemists of established repute engaged in such practice. Further, the Council expressed the opinion that the combination of the office of medical officer of health with those of public analyst, and gas examiner, was extremely undesirable and opposed to the public good. The Board replied that combined appointments of medical officer of health and public analyst were not approved as a general rule, but they had been allowed where the amount of analytical work was very small.

PUBLIC ANALYSTS.

It will be shown that the Council subsequently took steps to provide a special examination for professional chemists intending to practice in connection with the administration of the Sale of Food and Drugs Act.

In matters of legislation affecting professional public appointments, the existence of organisations concerned with the promotion of professional efficiency and integrity is often of the highest importance. Constituted of men having special experience, the Government can look to such institutions for advice and guidance ; and it should be noted that the endeavours of the Council of the Institute to encourage the authorities to insist on the highest qualifications for appointments have been prompted by the desire to promote the efficiency of the public service, though in so doing they have promoted the interests of the properly qualified. Similarly, when complaints of unfair treatment of officers have been received, the action taken by the Council has been in the interests of the profession as a

LEGISLATION.

1892.

whole rather than in those of the individuals immediately affected.

LICENCES
FOR STILLs.

In July, 1892, complaints reached the Council regarding the action of the Board of Inland Revenue with respect to the use of stills by analytical chemists and other members of the Institute. Representations were made to the Board, setting forth the conditions under which the stills were used, and complaining that such chemists had been required to take out licences for stills used for the preparation of distilled water. A reply was received that the Board had no desire to extend the obligation to take out a licence to analytical chemists using stills solely for purposes of distilling water, and that if an analytical chemist called upon to take out a licence would submit his case to the Board, they would be prepared to give it careful consideration. This not being entirely satisfactory, further representations were made to the Board with the result that they issued instructions to their officers that professors, teachers of chemistry, and analytical chemists should be allowed the use of stills for purely professional work in all cases in which no manufacture of any article for sale from or with spirit was carried on.

EXAMINA-
TIONS.

In 1892, the examinations were held in July in London only, and were conducted by two Examiners, one a teacher at a recognised institution, and the other a chemist in practice, it being considered advisable that practising chemists should take a part in deciding the fitness of candidates for membership. This system remained in force until 1909, when a larger Board was appointed, but still retaining the same principle.

FIRST
WOMAN
ASSOCIATE.

The Council had recorded a minute in November, 1888, to the effect that they did not contemplate the admission of women candidates to the Examinations; but, when an application was received, in 1892, from Miss Emily Jane Lloyd, she was duly admitted to the examination and, being successful, she became in due course, the first woman Associate.

PREMISES.

In view of the growing membership and consequent increasing work of the office, the Council had for some time recognised

the necessity for further accommodation than that possessed by the Institute at 9, Adelphi Terrace, and they therefore appointed an Office Committee in April, 1892, to seek suitable premises. At the same time, the Council found themselves faced with the difficulty of obtaining, in London, the use of a laboratory where the Examination could be held, and they were impressed with the unsatisfactory position of the Institute so long as it was dependent upon the goodwill of individuals or of other institutions for the means of carrying on this important function. The Examiners, in their report on the July Examinations, suggested that it would be far more satisfactory if the Institute possessed a well-furnished laboratory, capable of accommodating about twenty students, in which the Examination might, if necessary, be held at least twice a year.

The Council, therefore, determined to endeavour to obtain, if possible, a lease of premises upon which could be found accommodation for all the business of the Institute. On October 7th, 1892, an Extraordinary General Meeting was held to empower the Council to proceed with the proposal. The President explained that the Council had such premises in view, and that they hoped by suitable alterations to provide a properly equipped laboratory, as well as rooms in which the meetings of the Institute could be held. Such a plan, however, involved an outlay of capital, and they were advised that, under section 9 of the Charter, the approval of a General Meeting of the members of the Institute was required for that purpose. It is interesting to note that a letter was read from a Fellow who was unable to attend, in which he suggested that a subscription list should be opened among the members of the Institute, to raise funds for the purpose of acquiring a site for the erection of a building which should provide the necessary accommodation; or, as an alternative, that the amount be raised by shares, bearing a nominal rate of interest, issued to members. After some discussion, however, the Council were empowered to take steps to secure premises providing the necessary accommodation, and, if necessary, to expend upon the purchase of a lease, or buildings, a sum not exceeding one fourth of the invested capital of the Institute, which at that time amounted to about £6,500.

1892.
MOVE TO
BLOOMSBURY
SQUARE.

The Council thereupon concluded negotiations for securing the remainder (about twenty-two years) of the lease of 30, Bloomsbury Square, a house erected in the seventeenth century, on the site adjoining that occupied by the mansion of the Earl of Mansfield, L.C.J., which was sacked at the time of the Gordon Riots.* Being on the east side of the Square, the front was usually sunny and cheerful; the office on the ground floor, with panelled walls and carved mantelpiece, provided, at first, ample accommodation, though in time it became too small with the increase of business and consequent additions to the staff. A fine front hall with oak staircase, led to a suite of lofty rooms with heavy cornices and decorated ceilings, including the Council room, from which folding doors opened into another room which was gradually fitted as the Library, and to which the service staircase also gave access. Here the Institute moved early in the following year, anticipating the possibility of effecting a renewal at the termination of the lease; and the premises proved very suitable and convenient for the purposes during a period of steady development.

REGISTER.

In January, 1893, the Council dealt with the question of the use of letters indicating membership of various societies, and, having determined that it was inadvisable to encourage the use of such letters except when they denoted genuine professional qualifications, instructed the Registrar to omit from the Register of the Institute all letters indicating membership of any society except the Royal Society (London). Though, in consequence of this action, the Institute suffered the loss of one distinguished chemist, it was undoubtedly beneficial in discouraging a practice which had long been abused by persons having no recognised professional status.

* Bloomsbury Square was formed in the seventeenth century, most of the houses being built in 1665, though in nearly every case a storey has since been added. The east side, including No. 30, was known as Seymour Row. On the site of Lord Mansfield's mansion there are now three houses, Nos. 28 and 29 and a house in Bloomsbury Place; No. 31 was the residence for many years of Sir Anthony Panizzi, Principal Librarian to the British Museum. The Square was planted in 1807. In 1819, No. 30 was occupied by Sir John Silvester, Bart., and from his death in 1822 by his widow until 1843.



30, BLOOMSBURY SQUARE.

The Seventh Annual General Meeting—the fifteenth since the foundation—was held in the newly acquired premises on March 1st, 1893, when the Council submitted a report dealing with the matters already mentioned and others to which reference will now be made. Among these was the appointment of a Committee consisting of the President, with Messrs. Michael Carteighe and David Howard, to confer with the Solicitors of the Institute with a view to the thorough revision of the Bye-Laws, of which several were either ambiguous or imperfect.

1893.
FIFTEENTH
ANNUAL
GENERAL
MEETING.
BYE-LAWS.

At the same time reference was made to a report which the Council had received from the Censors. The proceedings of these officers were—as they still are—conducted privately and, except in extreme cases, known only to those immediately concerned; but should a case be deemed of such importance that the Censors felt obliged to call upon a member to resign and he declined to do so, the Bye-Laws and Charter required that the Censors should report the offender to the Council in order that such further steps might be taken as provided by section 16 of the Charter. In one instance, early in 1892, a Fellow whose name had been removed from the Register, after having been given an opportunity of being heard, sought an injunction to restrain the Council from removing his name, but eventually withdrew his case and gave an undertaking to refrain from describing himself as a Fellow.

After that, there was much discussion on the Council with regard to the necessity for some definition of unprofessional conduct. The Censors stated that they had received information tending to show that practices of an unprofessional character were unduly prevalent, and they directed the attention of the Council to the necessity for establishing among the members of the Institute a more definite standard of conduct in a professional sense, comparable with that recognised in the professions of law and medicine. It will be seen shortly that an Extraordinary General Meeting was held to consider this matter.

Prof. Tilden, commenting on the work of the year, in his presidential address, said that it had been fruitful in events

1893.

which indicated the progress of the Institute towards a more effective, dignified, and influential position. It was entering upon a new chapter of its history and it would rest with the members to determine, within the next few years, the future social and professional position of the analytical and consulting chemist.

LABORATORIES.

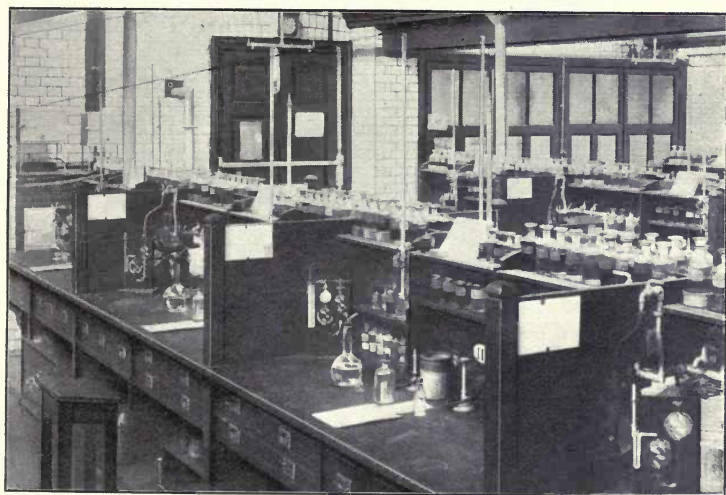
The Council were authorised by an Extraordinary General Meeting, held on April 27th, 1893, to spend a sum not exceeding £1,000 upon the erection of laboratories. The Council appointed Mr. H. V. Lanchester, F.R.I.B.A., architect, who submitted alternative schemes, but the tenders for that selected were much in excess of the amount originally asked for. The Council, therefore, reported to an Extraordinary General Meeting, held on July 7th, when the expenditure necessary for the completion of the work was duly approved. Particulars of the scheme and of the plans were published in the *Proceedings*, and the building, while in progress, was supervised by the House Committee under the Chairmanship of Mr. R. J. Friswell, whose services were subsequently acknowledged.

On December 8th, 1893, the laboratories were formally opened by the President (Prof. Tilden) who invited the Past-Presidents, the Officers and Members of the Council, the Examiners, professors in recognised colleges, and representatives of other societies to inspect the laboratories; and subsequently entertained them to luncheon in the Council room. Examinations were held simultaneously in London, Dublin, and Glasgow, during the following week; and a few days later, the Duke of Bedford, the ground-landlord of the Institute, paid a private visit of inspection, being received by the President and Treasurer, with Prof. Meldola and the Registrar.

These laboratories have proved suitable for their purpose during the past twenty-one years. Improvements and additional fitments have been introduced from time to time, in accordance with suggestions advanced by the examiners, and the examinations have been satisfactorily carried out. The laboratories have also been used for practical examinations conducted by the University of London, the College of Preceptors, and other bodies.



THE ENTRANCE HALL AT 30, BLOOMSBURY SQUARE.



PART OF THE LABORATORY AT 30, BLOOMSBURY SQUARE.



THE OFFICE MANTELPIECE AT 30, BLOOMSBURY
SQUARE.

The Extraordinary General Meeting held on April 27th 1893.
 had been summoned for the additional object of receiving a CENSORS.
 report from the Censors, and for the consideration of the
 advisability of passing a resolution or resolutions thereon.
 The Censors recommended that the following Resolution
 should be submitted :—

“That the following acts, or any of them, shall be held to be dis-
 creditable to the profession of Analytical and Consulting Chemist,
 viz :—

- “(a) Advertising for practice in newspapers, journals, magazines
 or other published papers.
- “(b) Sending out by post, or otherwise, letters, circulars, or cards,
 offering professional services.
- “(c) Undertaking through another person or agency the performance
 of professional work at fees representing only a small fraction
 of the usual recognised scale of fees for analytical work.
- “(d) Supplying to other persons, not being qualified chemists,
 reports upon samples or processes with the knowledge that
 these other persons will issue such reports as their own work.
- “(e) Issuing or allowing to be issued certificates of purity or
 superiority concerning advertised commodities, such certi-
 ficates being either not based upon the results of an analysis,
 or containing exaggerated, irrelevant, or merely laudatory
 expressions, designed to serve the purpose of a trade puff.
- “(f) The unauthorised use of letters indicating University degrees.”

The President (Dr. Tilden), said that many complaints had
 been received which were usually not of such a character as to
 demand the intervention of the Censors, but the actions com-
 plained of, indicating a lack of professional spirit, probably
 arose in most cases from want of proper consideration.

With reference to the first two clauses, he urged that if
 solicitors, medical men, and stockbrokers were forbidden
 under severe penalties to advertise, it was not a very dignified
 thing for an analyst to do. As for the remainder of the clauses,
 the Censors condemned the performance of professional work
 at excessively low fees, the giving of “puffing” testimonials,
 and the use of fictitious degrees. Although it was not known
 that any case had occurred under clause (f), it was common
 knowledge, at the time, that degrees of a sort were obtainable
 through doubtful agencies; and the Council had already, in
 March, 1891, resolved that no degree be inserted in the Register
 of the Institute without the name of the University being
 annexed, and unless it be shown to be genuine to the satis-
 faction of the Council.

1893.
CENSORS.

It was felt that the condemnation by the mass of the profession was the best check on unprofessional conduct, and the passing by the Institute in General Meeting of the resolution would contribute to the promotion of a better understanding on such matters. After discussion, the resolution was passed, and a report of the meeting was published in *Proceedings*, Part II., 1893. This resolution was also included in a circular issued in December, 1895, and, since 1910, has, by order of the



Council, been reproduced annually in the published Register of the Institute.

BYE-LAWS. In 1893, the Bye-Laws were revised, and, after being duly approved by Extraordinary General Meetings held on May 16th and June 7th, were submitted to the Privy Council and allowed on August 29th.

SEAL. About this time, the design of the Institute's Seal was determined, the figure of Priestley being copied from the statue at Birmingham, with the consent of the sculptor, Mr. Francis John Williamson, whose son, Dr. Sidney Williamson, is a Fellow of the Institute. The die was cut by Mr. William Moreing, and the seal was duly adopted as the

Common Seal of the Institute to be used for legal documents and certificates.

1893.

The Regulations which came into operation in October, 1893, form the basis of those in force to-day. The two main requirements were: (i.) Three years' systematic training in chemistry, physics, elementary mathematics, and one optional scientific subject, with the alternative that the candidate could substitute two years' experience in the laboratory of a Fellow for one year at College; and (ii.) three examinations—<sup>REGULA-
TIONS</sup> a Preliminary, in subjects of general education to be passed by the candidate prior to his registration as a Student; the Intermediate in general theoretical and practical inorganic and organic chemistry; and the Final Examination in a branch of chemistry selected by the candidate from a list prescribed by the Council. Exemption from the Intermediate Examination was allowed, however, to the holders of certain degrees and diplomas. Students were required to show that they had attended all the courses in each of the subjects, both principal and subsidiary, in accordance with the Regulations, and that they had satisfactorily passed the class examinations.

The insistence on a preliminary examination was felt to be essential, so that the general status of the profession should be maintained. This Regulation, moreover, was advantageous to the teachers, in that students came to them better prepared for proceeding to their professional education. The Council did not undertake to hold this examination, but approved of a certain number of examinations conducted by Universities and other public bodies and commonly passed by candidates for the medical and legal professions.

The curriculum was extended by the addition of an optional subject having a bearing on professional chemical practice, the following being approved: Higher Mathematics; Elementary Mechanics, Steam and General Chemical Engineering; Metallurgy; Geology and Mineralogy; Elementary Physiology. To this list the Council added subsequently, Higher Physics, Bacteriology, Agriculture, Elementary Botany, and Elementary Biology.

With regard to the recognition of institutions for the training of candidates for the examinations, the Council realised the

importance of making a careful selection in the interests of the students. The Council had to satisfy themselves as to the staff, the courses, the equipment of the chemical and physical laboratories, with the academic successes of the students, and the general character of the Institutions and of the students proceeding from them. They stipulated that no college should be recognised unless a full three years' course was provided as prescribed by the Regulations; all instruction in the necessary subjects should, in the opinion of the Council, be of systematic character, of University standard, and given in the daytime. Any application accepted after that period would be so only on the understanding that, at such times as the Council saw fit, they should be permitted to send representatives to inspect the laboratories of the college, and that any change in the staff of the college, which might affect any subject within the Regulations, should be reported at once to the Council.

The Council also determined that election to the Fellowship without examination should be restricted to exceptional cases, and accorded only to candidates of acknowledged repute and professional position. Many were of opinion that the time had come when the Institute should cease to admit candidates without examination, since it was not just that candidates, on the strength of academic qualifications and experience, should be suddenly placed on a par with those who had fulfilled to the letter all the requirements of the Institute, both as to training and examinations. It was a mistake for young chemists who had a few years' experience in some department of professional chemistry, to expect the Council to accept them as Fellows without passing through the grade of Associate. No such exemptions were allowed in the professions of law and medicine. The object and scope of the examinations of the Institute differed widely from other examinations, and the Council held that they should be of such a character that no Degree should entitle a candidate to exemption from both examinations of the Institute. They decided, however, to exempt, from the Intermediate, candidates who had taken degrees with honours in chemistry or other qualifications of equivalent standard. Such exemptions encouraged candidates, while working for the A. I. C. to take

science degrees, and this system, in cases where the *practical* training had been satisfactory, resulted in the production of chemists of high efficiency. The Final Examination enabled the Examiners to apply the requisite test, and it was found that no insignificant percentage of those exempted from the Intermediate Examination were unsuccessful in the first attempt at the Final. Some of these withdrew from the list and did not enter again, but the majority took further training and presented themselves, better prepared, at a subsequent examination. By this means, the standard for membership was fully guaranteed and maintained. The introduction of the Final Examination practically demanded another year's work, which could be undertaken by the Student at any place and in any way suitable to the career he contemplated.

1893.

The original branches of the Final Examination were, (a) Mineral Chemistry, (b) Metallurgical Chemistry, (c) Gas Analysis, and (d) Organic Chemistry. Subsequently, branch (c) was changed to Physical Chemistry (p. 146); it will be recorded how branch (e), the Chemistry of Food, Drugs, etc., came to be added (pp. 139, 142, 145, 147, 157); and reference will be made to the events which gave rise to the establishment of branch (f), Biological Chemistry (p. 149).

In view of the Fertilisers and Feeding Stuffs Act, 1893, coming into operation, the President, accompanied by Messrs. Bernard Dyer, Otto Hehner, and John Hughes, had an interview, on October 26th, with the Secretary of the Board of Agriculture in order to urge the importance of selecting properly qualified analysts under this Act, and to impress upon the Board the character of the qualification indicated by Fellowship of the Institute.

FERTILISERS
AND FEED-
ING STUFFS
ACT.

Early in 1894, the Council received with deep regret the resignation of Mr. Robertson from the office of Registrar and Secretary owing to serious illness by which he lost his sight. The Council recorded their appreciation of his faithful and energetic discharge of his duties and of his valuable services to the Institute. On March 1st, Prof. John Millar Thomson, was appointed Honorary Registrar and Secretary for the year

REGISTRAR
AND
SECRETARY.

1894.
—

1894-95 and Mr. Richard B. Pilcher, who had joined Mr Robertson as Clerk, in April, 1892, was appointed Assistant Secretary.

SIXTEENTH
ANNUAL
GENERAL
MEETING

Prof. Tilden, in his final Presidential Address, at the eighth—the sixteenth since the foundation—Annual General Meeting held on March 1st, testified to the hearty work of the Council during his three years of office.

PROF.
TILDEN'S
THIRD
ADDRESS.

The Institute had become established in new premises with its own laboratories and meeting rooms; the Regulations, after prolonged and careful deliberation, had been thoroughly reconstructed, and the examinations had assumed a more serious character, and yet the number of candidates presenting themselves was steadily increasing. It appeared, however, from a notice of motion before the meeting, that the regulation which required every candidate for the Associateship to produce evidence of having passed through a systematic course of three years' study in some public institution approved by the Council was distasteful to some members. The whole essence of the question arose out of the anxiety on the part of some practising chemists as to the position of their private pupils. Prof. Tilden inclined to the opinion that the men who were most desirous of taking private pupils were, speaking generally, those who were least likely to do justice to them, and against whom the pupils ought to be protected, if possible, by the Regulations of the Institute.

There had been some outcry arising from a misunderstanding of the Regulations, which certainly debarred untrained men from becoming members through the normal avenue of the Associateship. The Fellowship was not out of the reach of the irregularly qualified man, and subject to the condition that he could show a sufficiently broad foundation of scientific culture, every reputable analytical chemist engaged, *bonâ fide*, in the practice of his profession could gain a place on the Register. Every case of this kind, however, should be considered separately and upon its own merits.

A large number of the most eminent and professionally successful British chemists of the present generation received the whole of their instruction in chemistry within the walls of a stuffy, dirty, ill-ventilated little building which still stood in Oxford Street. But whatever advantages they acknowledged to have received there, were gained in spite of the discomforts of the place. It was for the sake of the great teacher (Hofmann) whose spirit and knowledge and enthusiasm animated the place that men resorted to the old College of Chemistry. Of the buildings now existent containing schools of chemistry in various parts of the country, some were ten times the size of the famous School in London, but the size and furniture of the building was not a measure of the quality of the work likely to be accomplished in them. It was open to any of the new Colleges and Technical Schools to apply for recognition by the Institute, and that recognition would not be withheld when a good case could be made out.

Apart from the considerations which he had indicated, apart from the desirability of training under competent teachers, of time for study undistracted by the calls of business, apart from any question of the hardship of interfering with the practice of receiving premiums from private pupils, or of the hardship to the pupils of paying for what after all they did not always get, there was the question of policy.

What business was likely to prosper which almost every year underwent a profound alteration of system? The Institute had taken a great deal of trouble; had spent many weary hours spread over months and years in debate, and as the result of it all a system had been evolved. It might not be perfect, but even if it were far more imperfect than he believed it to be, he would still say that it should be given a fair trial; the Council should continue for a reasonable time in the course which had been thus deliberately begun.

Referring to the meeting which had been held to consider the Report of the Censors, the President said he had little doubt as to the future of the Institute. With united action, with a lofty professional spirit, and a determination on the part of every Fellow and Associate to set his face steadily against such practices as those condemned by the Censors and repudiated by the united voice of the Institute; with a determination to keep in view not the private advantage of a small section, but the reputation of the corporate whole, and, above all, remembering that the Institute existed for the service of the nation, he was confident that it would go on from strength to strength.

The motion of which notice had been given and which had been placed on the Agenda for consideration at the same meeting was to the effect that candidates for the Associateship should no longer be required to have been trained in universities or colleges approved by the Council. On a question of order, it was pointed out that, under the provisions of the Bye-Laws, matters affecting changes in the Regulations for the admission of members were entrusted to the Council, and the President therefore ruled the motion out of order.

Prof. Tilden had good reason to feel satisfied with the advance made during his term of office and expressed his gratification at having been associated with a happy series of forward movements by which the Institute had been lifted from comparative obscurity into a position of influence and growing importance.

WILLIAM JAMES RUSSELL : PRESIDENT, 1894—1897.

Dr. William James Russell, Lecturer on Chemistry at St. Bartholomew's Hospital, was elected President in succession to Prof. Tilden, and had the advantage of coming into office when the aims of the Institute had become more clearly defined.

ROYAL
INDIAN
ENGINEER-
ING
COLLEGE.

In March, 1894, a question was raised on the transference to the Royal Indian Engineering College, then at Staines, of analytical work in connection with materials, stores, etc., used by railways in India, the work having been previously entrusted to private practitioners. Correspondence ensued with the President of the College, but the College authorities denied that they competed unfairly with private consulting chemists, as the work was conducted mainly for railways controlled by the Indian Government. The Council were therefore debarred from taking any action ; but the matter is of interest as forming a precedent for action subsequently taken by the Council in similar matters.

DEATH OF
DR. ALDER
WRIGHT

On July 25th, 1894, the Council had to deplore the loss by death of Dr. C. R. Alder Wright, one of the actual founders, Honorary Treasurer up to 1884, and one of the Trustees. His interest in the Institute had never flagged ; he was a most regular attendant at Council meetings and always ready to take his share in the work. On the death of Dr. Alder Wright the investments were transferred from the names of the Trustees—the others being Prof. E. Frankland and Mr. Charles E. Groves—to the Institute under Seal.

TRUSTEES

EXAMINA-
TIONS.

Examinations were held in the laboratories of the Institute in July and October, 1894, forty-four candidates presenting themselves, of whom thirty-one were successful. The Council gave notice that, in future, Examinations would be held in January and July of each year, this practice being continued until the increase in the number of candidates rendered it necessary to hold them also in April and October.



[Russell & Sons.

WILLIAM JAMES RUSSELL, PH.D., F.R.S
President: 1894—1897.

On November 23rd, 1894, a Conference was held on "The Relations of the Members of the Chemical Profession to one another and to the Public."

1894.

CONFERENCE.

The discussion was opened by Prof. Tilden, who said that the subject was so comprehensive that it was practically asking him to offer the Institute a complete code of professional conduct on all that related to the profession which was not of a truly scientific character. It was impossible to formulate a definite set of rules which would meet with the approval of every member. He indicated how, in the course of the Conferences, the Institute had attempted the establishment of a code. Considerable advance had been made on the occasion of the Extraordinary General Meeting which was held to consider the report of the Censors in April, 1893. Judged by the mere decalogue, a man might be considered eminently moral, and yet be a person with whom no professional man would like to associate; he might be a man of considerable scientific and technical skill, and yet not be the ideal professional chemist. A professional life might be carried on prosperously and yet without regard to those ideas—perfectly understood, although impossible to express—which were embodied in what Englishmen like to call a "gentleman."

A member, for instance, laid himself open to adverse criticism when he cast a covetous eye upon a post held by another, and took steps to oust the man who held the position. With regard to proceedings in the Courts of Law, Prof. Tilden considered that it was not justifiable for a scientific witness to use expressions tending to disparage the competency, the skill or the conclusions of a professional witness on the other side. Before all things a scientific man ought to speak the truth: the whole truth and nothing but the truth; he should not suppress material facts, even though they might tell against his client.

A subject which had been debated almost *ad nauseam* was that of "trade certificates"—certificates given to persons who wanted to sell something. In some cases, these certificates appeared to be justifiable, but they should be very cautiously expressed. A great many certificates were issued testifying to the purity of certain preparations, while suppressing some fact which might not at first sight appear to be of great consequence, especially concealing the fact that there were other ingredients present, the effect of which might be, at least, debatable, and concerning which the buyer ought to be informed. It was not fair to the buyer, who was usually quite ignorant of such matters, to omit anything from the report. It would be much better for the chemist to decline to give the testimonial or certificate. Some of these practices might be considered as evidence of *smartness*, but the chemical profession should aim at a standard higher than this.

It was sometimes supposed that a scale of fees was a kind of test of professional respectability. It would be impossible to construct a table of fees which could be generally used, and it was not fair to look at the fees as a gauge of professional ability. A young man commencing practice in a large manufacturing district—say in the Black Country or in Lancashire—could not command the same fees as a well-established analyst in the City of London, and yet the poor chemist in the Black Country might be really a creditable and skilful professional man. A strong sentiment in favour of a higher tone in professional life among chemists was very desirable, for upon the influence of such sentiment would depend the future position of the professional chemist, and the extent to which he would gain the confidence of the public.

1894.
CONFERENCE.

On this occasion the question was discussed as to how far it was advisable for specialists to claim an advantage over other members of the Institute in applying for appointments requiring particular knowledge of any branch. Some defended the position of the specialist, contending that if a chemist was asked to investigate a matter with which he was unacquainted he should pass it on to a brother chemist. Specialisation might be undesirable, but the public appeared to think otherwise.

This led to a discussion on the etiquette of applying for appointments. Many members did not consider it right to make application for an unadvertised post—a point of view highly desirable, but very difficult to maintain, particularly as sometimes vacancies were not advertised at all. The offering by public bodies of appointments to tender was condemned as derogatory to the dignity of the profession.

Allusion was also made to the practice of issuing lists of fees to the public—a practice generally condemned as unprofessional.

Referring to scientific evidence, it was considered unfortunate that the public analyst was bound by law to give his evidence in the form "I am of opinion," etc. The witness should confine himself distinctly to his own knowledge, but it was not always easy to state the *whole* truth, as he was so much in the hands of counsel and could not say all that he would wish.

REGISTRAR
AND
SECRETARY.

In February, 1895, Prof. Thomson resigned from the office of Honorary Secretary, but was reappointed Honorary Registrar. Mr. Pilcher was appointed Secretary, as a whole-time officer acting under the Registrar's advice. The office of Secretary had previously been held only as a part-time appointment.

SEVENTEENTH
ANNUAL
GENERAL
MEETING.

The ninth Annual General Meeting—the seventeenth since the foundation—was held on March 1st, when Dr. Russell delivered an Address commenting on the work of the year.

The objects of the Institute had been determined at an early stage in the history of the Institute, but it had taken sixteen years to arrive at the method of attaining those objects, and during the past year the Institute had steadily progressed in the course which had been decided upon. He discussed the various branches of the work of the Institute, the curriculum for membership and the Examinations, and referred specially to the Conference on professional conduct which had been held in November. There were, he said, unwritten laws which it was assumed all assented to, and which were enforced by the consensus of general opinion. It should be taken as an unwritten law that every action of every member should be in perfect good faith and with perfect honesty of purpose. The members must possess competent knowledge and the strictest integrity; by enforcing this opinion the Charter was fulfilled in its main conditions of elevating the profession of chemistry and promoting the efficiency and usefulness of persons practising the same. No member stood alone in the matter, but as an integral part of an organisation pledged to carry out its work efficiently and honestly in the public interest, and the whole body benefited or suffered by the actions of its members.

He hoped that each year they might bring the members together in more intimate and friendly union, so that one and all would strive

to their utmost not only to uphold the honour of the Institute, but also to increase its reputation and establish its position.

1895.
—

For the first few years at 30, Bloomsbury Square, the Council experienced considerable difficulty in making the income of the Institute meet the necessary expenditure and although at the end of 1895 there was a small margin, it was not sufficient to allow of any new development. It was found that the examinations conducted at the fees then prescribed resulted in a loss to the Institute of a sum approximating to £3 10s. for each candidate, and the Council had later to consider the question of raising the fees (p. 177). FINANCES

In July, 1895, twenty-five candidates were examined under the old Regulations and three under the new: two in the Intermediate and one in the Final Examination. EXAMINATIONS.

About this time, the House Committee had under consideration the question of letting or otherwise making use of the rooms on the upper floors of the house of the Institute; but, in consequence of the outlay necessary for its redecoration, the Council postponed dealing with the matter. They decided, however, to fit up a room on the first floor as a writing-room for the use of Members. This room subsequently contained the greater part of the Library. PREMISES

The House Committee also considered the question of allowing Fellows the use of the laboratories. They did not think it advisable to allow such use for continuous research work, but suggested that the laboratories might be available at a nominal charge to Fellows desiring to conduct short professional investigations. The report was not adopted, but there was an informal understanding that the Treasurer should be empowered to make arrangements whereby temporary accommodation could be provided on terms sufficient to cover expenses. Under these conditions, the laboratories have been used by Fellows, from time to time, when no examinations were in progress. The Council, further, decided to announce that they were prepared to entertain applications from other examining bodies and institutions desiring the use of the laboratories for examination purposes.

A suggestion was received that the Institute should form a

1895

PROFES-
SIONAL
CONDUCT.

museum of apparatus and materials of historical interest, but this was regarded as rather outside its functions.

In 1895, the Council devoted a special meeting to a discussion on the question of advertising for practice and this led to the issue, to Fellows and Associates, of a circular embodying a copy of the Resolution passed in April, 1893, to which reference has already been made.

The attention of the Council was also drawn to the fact that members residing in the Colonies frequently found themselves opposed, particularly in metallurgical matters, by unqualified and incompetent men who gave misleading assay certificates. Similar difficulties were to a certain extent met with at home, but complaints have become less frequent since the Institute has obtained greater recognition, and the public have begun to realise the significance of its qualifications.

The Council also discussed the question of responsibility in connection with the issue of certificates for professional services, and recorded the opinion that all papers and certificates relating to analyses should bear the names of the persons responsible for the performance of the work.* This question had a direct bearing on the practice of "cover" work, *i.e.*, work undertaken through some agency not qualified to practice, but pretending to do the work and sharing the fee with the actual analyst, often exploiting the latter in an unwarrantable manner. Later, in the same year, on the question being raised, the Council decided that the qualifications for the practice of professional chemistry being purely personal, it was highly undesirable that a company or corporation should represent itself as "analytical and consulting chemists."

EIGHTEENTH
ANNUAL
GENERAL
MEETING.

At the tenth Annual General Meeting—the eighteenth since the foundation—held on March 2nd, 1896, Dr. Russell congratulated the Institute on its continued progress in strength and influence.

* As early as 1878, a correspondent writing to the *Chemical News* (Vol. XXXVII., p. 39) expressed the opinion that "the report should be signed by the person who makes the analysis and countersigned by the principal," urging that "In Chemistry, everything depends on individual manipulation and the principal has absolutely no check on the work and has to depend entirely on the skill (and honour) of his assistant."

He said that he felt the members were more united than formerly. By developing the Institute and following out its aims, they were doing a great public service and carrying on an important educational work. By directing students in a definite and well considered course of training, benefit not only accrued to the students individually, but the position of the Institute as a whole was strengthened. It would take time for the public to realise the importance of this work, and, indeed, to know what chemistry was; many would be astonished to learn that it was a science, and one requiring years of study to master its wide-spreading elements sufficiently to be able to practise it as a profession. A learned judge, only a few weeks before, had stated that his sole idea of a chemist was a man who kept a druggist's shop, and to whom one would resort to get a dose of medicine. No wonder then that many of those who had to select public analysts or chemists for other appointments undervalued their services; for they had no idea how chemical problems had to be investigated. Because some could be solved by a sort of mechanical process, they concluded that all could be treated in the same way; and they would not be surprised to hear that an analyst's work was about to become a purely mechanical operation. More than one case had come to the knowledge of the Institute in which the remuneration offered by a public body had been out of all proportion to the service required, and it was thought that these cases arose from actual ignorance of the nature of the work to be done. It was looked upon as work to be contracted for, like digging a ditch or building a wall, and one had simply to take the lowest tender. To alter this view of the matter, the public had to be, and somewhat slowly was being, taught what chemical work was. They should know that chemists themselves, whether Members of the Institute or not, were agreed that—like medicine, law, and engineering—chemistry required definite study and lengthened training, and that the great function of the Institute was to give to those who wanted chemical aid the means of selecting men who had been properly trained and educated. To spread abroad this knowledge, the Institute must chiefly look to its Fellows. With some who knew but little of the Institute, the dominant idea was that its main purpose was a pecuniary one, that it was an institution worked by chemists for their own pecuniary benefit. If this were really the case, many would cease to have interest in it, and to refute that view one might well point to the course of study and examinations enforced on candidates for membership. At the same time, the pecuniary side was not one to be ashamed of, and there was no reason why it should not be openly discussed. The Institute could insist on all its members going through a certain course of instruction, but although it could fairly define the minimum of study necessary, it seemed impossible for it fairly to define the minimum amount of remuneration which any member should be at liberty to receive. This must be left to individual action, principally for the reason that the conditions under which the Fellows worked were so varied that no hard and fast rule could be laid down which could fairly apply at all. On the other hand, since this liberty of action was left to the Fellows, the Institute had a right to expect them to use it with discretion, and not to forget that every action of a member affected the body as a whole.

Dr. Russell also referred to the increasing recognition accorded by governmental and local authorities to the qualifications. He expressed the hope that the Fellows and Associates would be brought closer together in their professional relationships, and that they would always look upon the Institute's house as their headquarters.

1896.

It is worthy of note that, throughout his Presidentship, Dr. Russell was particularly desirous to promote good fellowship and greater mutual respect among the members, and he was anxious to bring them more often together. During his first year of office, he presided at a Dinner held on May 25th, 1894, when the company included Lord Kelvin, President, and Sir John Evans, Treasurer, of the Royal Society; and on June 5th, 1896, with Miss Russell (Mrs. Alexander Scott), he invited the Fellows and Associates to a Soirée at the Royal Institute of Painters in Water Colours, receiving a very large number of guests, including Prof. Mendeléeff.

DINNER.

SOIRÉE.

LEGISLA-
TION.

In the previous year, 1895, the Council had become interested in the proceedings of the newly-appointed Select Committee of the House of Commons on Food Products Adulteration, and had requested that the Institute might be allowed to send a representative to give evidence as to the training and qualifications necessary for persons desirous of becoming public analysts. The Council prepared an outline of the evidence proposed to be given, the chief points being: the importance of selecting properly qualified and experienced analysts for appointment under the Sale of Food and Drugs Acts; that the Institute would be willing to establish a special examination, open only to Fellows and Associates, for the qualification of public analysts, similar to the examinations held for analogous positions in Germany and in Canada; and that the Institute would maintain a register of persons eligible for such appointments. The Select Committee actually decided to take such evidence, but was unable to do so owing to the dissolution of Parliament. Their report, published in July, 1896, contained a recommendation for the establishment of a Court of Reference, which was to include representatives of the Institute, and was to be empowered to make orders respecting standards of quality and purity of food and drugs, which orders, on confirmation by a Secretary of State, were to have the force of law. When, however, the Bill was presented to Parliament, it did not include any such provision.

REGULA-
TIONS.

The Regulations adopted in 1893 were by this time in full operation, though a number of candidates were yet entitled to admission under the old scheme. The standard of the examinations was maintained to correspond with the highest

training given in the universities, and the qualifications A.I.C. and F.I.C. were more frequently demanded for public and other important positions requiring chemical knowledge and skill. With the growing importance of the profession, a guarantee of practical and scientific knowledge had long become a necessity, and the Council were determined that the Institute, as a body specially constituted to undertake these functions, should give the highest possible qualification.

In 1896, the branches of the Final Examination were defined, each Candidate being required to show a thorough acquaintance with one of the following: (*a*) Mineral Analysis—General Inorganic Qualitative and Quantitative; (*b*) Analysis and Assay of Metals, especially Alloys; (*c*) Gas Analysis, including the calibration of measuring vessels and complete analysis of mixed gases; (*d*) Organic Analysis, including combustions: the estimation of the proximate constituents of organic mixtures; and (*e*) Analysis of Water, Food, and Drugs, including the Assay of Alkaloids and recognition of impurities, adulterations and substitutions.

In June, the question of establishing a Benevolent Fund was again under consideration in connection with a case of necessity which had been brought to the notice of the Council. The discussion led to the collateral proposition of establishing an Appointments Register, which, although not immediately adopted, afterwards became an important department of the work of the Institute (p. 221).

Up to this period, the Institute possessed no Library and, until the move to Bloomsbury Square, had no accommodation for one. Early in 1897, Mr. Otto Hehner, then an Examiner, raised the question as to whether the Institute should supply books of reference for the use of candidates during practical examinations. The students had been previously—as they are still—allowed to use their own books. Mr. Hehner followed his suggestion by presenting a number of carefully selected standard works to the value of £40, which formed the nucleus of the present collection. This handsome gift was followed by others both of money and books, and thus the Institute gradually acquired a useful working Library. Apart from the support of the members, the Institute has been indebted to the Councils of several societies, and to Fellows and others,

1897.
LIBRARY.

for the donation of journals. A Committee was appointed, and an annual grant from the general funds was set aside for Library purposes.

The Council decided that it would be desirable to form a collection of books relating to chemistry and the allied branches of science, not only for use at the examinations, but also for consultation by Fellows and Associates. The Library Committee was instructed to decide what books were to be purchased with the donations. Later, in 1899, Mr. A. Gordon Salamon generously contributed a hundred guineas, which enabled the Library Committee to purchase a considerable number of technical books. The Library has steadily increased: the books are consulted more and more by the Fellows, Associates and Registered Students, and are much appreciated by candidates at the examinations.

NINETEENTH
ANNUAL
GENERAL
MEETING.

At the eleventh Annual General Meeting—the nineteenth since the foundation—held on March 1st, 1897, the Council reported that they had considered propositions, submitted by Dr. Frank L. Teed, with reference to taking steps to obtain compulsory powers for the registration of practising analytical and consulting chemists, and to obtain powers whereby the acquisition of membership of the Institute should in future be compulsory on all who intended to practice professional chemistry. Some members held that the remedy lay in the development of the Institute and in making the value of its qualifications more widely recognised. The title of “professional chemist” had been denied the Institute at its foundation and it was probable that not only a very large number of partially qualified chemists engaged in industry, in teaching and in other branches, but also many pharmaceutical chemists and chemists and druggists, and even medical men, would claim to be registered. These would be placed practically on a par with the Fellows of the Institute and probably a period of over half-a-century would pass before the last of those thus registered would be removed. While feeling much sympathy with the proposal, the Council reported that owing to parliamentary, legal, and other difficulties, largely due to the varied nature of the conditions of practice, they considered it inadvisable to take any immediate steps in the direction indicated.

“REGISTRATION” OF
PROFESSIONAL
CHEMISTS.

In his final Presidential Address, Dr. Russell, after commenting on the difficulties with which succeeding Councils had been faced, said he felt that the Institute had become an important and well-established institution with definite aims which it remained for the Fellows and Associates to pursue with energy and perseverance.

1897.
 DR. —
 RUSSELL'S
 THIRD
 ADDRESS

He referred to the improved character of the examinations, and advanced a useful suggestion that the Institute should become possessed of a collection of carefully analysed specimens of artificial and commercial products, minerals, ores, etc., to be made use of in the examinations, particularly in the various branches of the Final Examination. From that time the Examiners have been assisted by many Fellows and others who have presented them with specimens for this purpose. He warmly commended the thoughtful generosity of Mr. Hehner in the provision of books of reference for the use of the candidates.

He also referred to the work of the Select Committee of the House of Commons on Food Products Adulteration and to the desire of the Council to afford a qualification for Fellows and Associates intending to practice, as Public Analysts, a matter which his successor in the presidential chair, Dr. Thomas Stevenson, brought to a successful conclusion.

THOMAS STEVENSON : PRESIDENT, 1897—1900.

At the time of his election as President of the Institute, Dr.—later, Sir Thomas—Stevenson was Lecturer on Forensic Medicine and Toxicology at Guy's Hospital and Senior Official Analyst to the Home Office. He had been one of the Original Fellows, a Member of the first and of three subsequent Councils, and had served several periods as a Censor. He was desirous of seeing the Institute authoritatively recognised as the qualifying body for public analytical appointments, and immediately took this matter in hand so far as public analysts were concerned.

PUBLIC ANALYSTS.

The Local Government Board had invariably accepted the Fellowship of the Institute as sufficient evidence of competency for public analytical appointments so far as chemistry was concerned ; but the Minutes of the Board required a knowledge of therapeutics and evidence of experience in microscopy. The Council therefore prescribed a course in therapeutics, and, for a time, this subject appeared in the list of optional subjects, one of which must be taken by students training for the Associateship. Candidates who produced satisfactory evidence that they had passed through such a course were granted a certificate, but this arrangement did not satisfy the Board ; so the Council, in order to enable Fellows and Associates to meet the requirements in every respect, resolved to hold an examination in therapeutics, pharmacology and microscopy, open to all Members who wished to receive the certificate of competency in these subjects, and the examination was incorporated with the Final Examination in branch (*e*) for the Associateship.

EXAMINA- TION FOR PUBLIC ANALYSTS.

Dr. Stevenson undertook the duty of honorary examiner in these subjects, the first examination being held in October, 1898. For the purposes of this examination, a collection of drugs was formed, the Council being indebted to the Society of Apothecaries and the Pharmaceutical Society for providing many of the specimens. In the following year,



[Jerrard.

SIR THOMAS STEVENSON, M.D., F.R.C.P.

President: 1897—1900.

a formal application was addressed to the Board, for the acceptance of the certificate of the Institute in therapeutics, pharmacology and microscopy. This was duly granted, the Institute undertaking to maintain a high standard in the additional examination. 1897.

The attention of the Council was again directed in this year to the practice among local authorities—mainly with a view to economy—of appointing the same person to the offices of Medical Officer of Health and Public Analyst. Letters were addressed to the Local Government Board, urging the importance of confirming the appointment as public analysts of such candidates only as had received systematic training (such as is required of candidates for admission to the examinations of the Institute), and possessed satisfactory knowledge, skill and practical experience in the analysis of food and drugs obtained in the laboratory of a public analyst or chemist of repute engaged in such practice. Representation was also made that medical practitioners, unless trained and experienced in practical chemistry, were not sufficiently well qualified to practise as public analysts, and that the proper discharge of the duties of a public analyst required special training and particular experience not necessarily possessed by holders of the diploma in Public Health. PUBLIC ANALYSTS

In 1897, a list of approved Preliminary Examinations was included in the Regulations, and the compulsory subjects were defined as follows: (a) English language; Latin; Mathematics, comprising Arithmetic; Algebra (to simple equations inclusive); Geometry (Euclid, Books I.—III.). One of the following: French, German, Greek, Italian, any other Modern Language, or Logic (pp. 161, 179, 198). REGULATIONS.

At the twelfth Annual General Meeting—the twentieth since the foundation—held on March 1st, 1898, Dr. Stevenson remarked on the continued progress of the Institute: for the first time since moving to Bloomsbury Square, a small addition had been made to the investments; the number of candidates for examination and consequently the roll of members had gradually increased; moreover, the extension of the new curriculum of training and the thoroughness of the examinations had contributed TWENTIETH ANNUAL GENERAL MEETING.

1898.

TWENTIETH
ANNUAL
GENERAL
MEETING.

to the enhancement of the reputation and influence of the Institute and the value of its membership.

He referred also to the establishment of the Library; the negotiations with the Local Government Board in connection with the qualifications of public analysts; and the work of the Censors. Commenting especially on the subject of advertising by professional chemists, he expressed his regret that some regarded the decision of the Institute in 1893 as a bar to the legitimate practice of their profession. To his mind, to advertise or to tout for practice was degrading, and a virtual acknowledgment that those who did so could not compete on equal terms with their fellows. In no other profession in this country were such practices tolerated. Barristers, solicitors, physicians, surgeons, dentists, architects, civil engineers, and stockbrokers were all forbidden to advertise. If it were ever sanctioned as legitimate for chemists, they would cease to be regarded as professional men, and the interests of professional chemistry would suffer. With regard to reports to be used by way of advertisement, he said they should be based upon good faith and accurate analysis, and be free from all meretricious environment; in this latter category should be placed all laudatory expressions that were unproven or unprovable, going beyond what a chemist, *quâ* chemist, could legitimately make, and which might just as well, scientifically speaking, be made by "the man in the street" as by the chemist. In congratulating the members on the fact that the Institute was about to enter on its majority, Dr. Stevenson said that those who had laboured for its welfare and advancement felt that they had not laboured in vain. He confidently asserted that professional chemists were taking a higher rank, were more esteemed, and better merited their status than at any previous period; and he felt that the Institute had contributed more than any other factor.

DINNER.

A public dinner was held on April 28th, 1898, the guests including Lord Reay, Mr. Justice Byrne and Sir John Evans, Treasurer of the Royal Society.

Responding for the House of Lords, Lord Reay referred to the imperial importance of chemistry as applied to manufactures, and urged that study of chemistry was not only a matter of interest to scientific men but a question of the highest importance to the Empire.

Mr. Justice Byrne, in proposing success to the Institute, said that the work of chemists was full of fascination; for them there were "every morning new horizons, every night new stars." He congratulated the Institute on its continued progress; it enabled the public to know where to find chemists on whom they could rely.

RECEPTION.

On May 24th, the Presidents of the Institute of Chemistry, the Society of Chemical Industry, and the Society of Public Analysts, held a Reception, to which the Members of all three Societies were invited, at the Galleries of the Royal Institute of Painters in Water Colours. The guests, numbering about 800, were received by Dr. and Mrs. Stevenson, Prof. and Mrs. Frank Clowes, and Dr. and Mrs. Bernard Dyer.

REGULA-
TIONS.

The Regulations of the Final Examination received further attention and the several branches were more fully defined.

Branch (c) was changed entirely, and instead of " Gas Analysis, including the calibration of measuring vessels and complete analysis of mixed gases," the Council substituted " Physical Chemistry, including the ordinary physical measurements which have a direct bearing on Chemical Science." 1898.

During the early years of the occupancy of 30, Bloomsbury Square, the Council considered various propositions for utilising or sub-letting the upper floors of the house ; but they remained unoccupied until 1898, when it was deemed desirable to have a permanent officer resident on the premises of the Institute, and arrangements were made for the accommodation of the Secretary. PREMISES.

That year, through the kind interest of the President, the Library received a substantial addition of nearly 360 volumes from Mr. Robert Gordon, brother of the great General. This collection, which had formerly been in the possession of Mr. Frederick Perkins, of Messrs. Barclay, Perkins & Co., consisted mainly of works published between 1750 and 1860, including a complete set of the *Annales de Chimie et de Physique*, from 1789—1854. The Council presented to the Chemical Society a number of works of historical interest, copies of which the Society had not previously possessed. LIBRARY.

At the thirteenth Annual General Meeting—the twenty-first since the foundation—held on March 1st, 1899, Dr. Stevenson announced that the Council had decided to give notice that no candidate should be allowed to present himself for examination under the old regulations after March 1st, 1900 ; so that from that date the new system would be fully established. Having regard to the status of future members of the Institute, the Council had communicated to the General Medical Council their opinion in favour of raising the standard of the professional Preliminary Examinations, by ceasing to recognise junior and second class certificates, thus intimating its view with regard to the necessity for the possession of good general education by those who intend to follow a professional career. TWENTY-FIRST ANNUAL GENERAL MEETING.

Referring to the examination in Therapeutics, Pharmacology and Microscopy, Dr. Stevenson said that it was nearly twenty-four years since the Sale of Food and Drugs Act had been passed. Public analysts appointed under it were required to satisfy the Local Government Board as to their competency, not only in analytical chemistry, but also in microscopy, and as to their knowledge of the actions of poisons and drugs

1899.

TWENTY-
FIRST
ANNUAL
GENERAL
MEETING.

injurious to health. Since the establishment of the examinations of the Institute, the Board had had no difficulty in recognising that Fellows and Associates were competent professional chemists, and invariably accepted them as such; but there had always been a difficulty with regard to evidence of experience in practical microscopy and in knowledge of the effects of ordinary poisons. A satisfactory test was demanded alike by intended Public Analysts and the Board; the Institute had supplied that demand. The examination would tend to the advantage of the Institute and would also be a boon to the officials of the Local Government Board, inasmuch as they would have a trustworthy certificate as to the general competency of an elected public analyst in all the necessary subjects.

Dr. Stevenson referred also to the complaints received with regard to the tendency on the part of sanitary authorities and public and private bodies to do the work of professional chemists, attempting in an unjustifiable manner to oust the private analyst—who, if a member of the Institute, was not allowed to advertise or tout for practice—by sending out prospectuses, lists of fees, and touting circulars, thus interfering with those who endeavoured to carry on professional work in a legitimate manner. Against such doings the Council had made energetic protest, and had drawn the attention of those who might be expected to direct or control these various public, quasi-public, and private bodies, to their unprofessional actions.

LEGISLA-
TION.

The Sale of Food and Drugs Bill, prepared by Mr. Walter Long, President of the Board of Agriculture, the Solicitor-General, and Mr. T. W. Russell, which had so long been under the consideration of Parliament and the Standing Committee on Trade of the House of Commons, was among the first matters to engage the attention of the Council in 1899. Mr. Walter Long was asked to receive a deputation from the Institute with reference to the importance of introducing into the Bill more definite regulations with regard to the qualifications of public analysts. The Deputation was received at the House of Commons on March 21st, the members present being the President, Mr. M. Carteighe, Dr. Bernard Dyer, Mr. W. W. Fisher, Mr. Otto Hehner, Mr. David Howard, and Dr. J. A. Voelcker. They expressed the opinion that it was most desirable that definite qualifications should be required, and it was pointed out that the Institute was the only incorporated body undertaking the examination of analysts. They, therefore, urged that Fellowship or Associateship of the Institute of Chemistry should be insisted upon as a recognised qualification for public analyst appointments.

Mr. Long replied that the Board understood the importance of appointing only thoroughly qualified and competent analysts; he imagined that the Board would concur with the views expressed as to the desirability of requiring definite

qualifications ; but he was not sure that it would be wise to limit the qualifications to one particular diploma, as such a course would add to, rather than decrease, the difficulties of selection. At a meeting of the Standing Committee on Trade of the House of Commons, an amendment was introduced, on the motion of Sir Charles Cameron, Bart., providing that any public analyst appointed under the Sale of Food and Drugs Acts should furnish such proof of competency as might from time to time be required by regulations framed by the Local Government Board ; and on the passing of the Sale of Food and Drugs Act, 1899, the regulations framed by the Board embodied the statement, confirming the formal recognition already granted, that

1899

“ It would accord with their existing practice to accept as sufficient documentary evidence of the requisite qualification under the Acts the diploma of the Fellowship or Associateship of the Institute of Chemistry of Great Britain and Ireland, together with the certificate granted by the Institute after an examination conducted by them on lines approved by the Board, in therapeutics, pharmacology and microscopy.”

The Local Government Boards for Scotland and Ireland framed similar Regulations shortly afterwards.

The Board of Agriculture acting under the provisions of the new Act issued instructions to the local authorities directing their attention to the Act and specifically enjoining them to appoint analysts, and inspectors to take samples for analysis, and generally to put into force the law relating to the detection and suppression of adulteration.

The Council have always taken an active interest in the working of these Acts, for it is part of the duty of the Institute, in accordance with the Charter, to afford facilities for the better education and examination of persons desirous of qualifying themselves for the public service. At the same time, the Council have protested against what they have considered abuses in connection with the appointments of public analysts, and in such action they have frequently been supported by the Local Government Boards. The Council held—and still hold—that it would be better for the public if the Boards possessed more control in connection with the terms and conditions of the appointments, seeing that the local authorities now controlling them are constituted largely of those whose business comes directly under the influence of the Acts.

PUBLIC
ANALYSTS.

1899.
BIOLOGICAL
CHEMISTRY.

In 1899, the Council appointed a special Committee to investigate a matter raised by Prof. Percy Frankland, namely, the importance, to professional chemists, of a training in bacteriology. The Committee submitted a report to the Council at the October meeting, embodying a number of recommendations which were adopted. The subject—Bacteriology—was added to the list of optional subjects, one of which is required to be taken by candidates training for the examinations for the Associateship; and a new branch was added to the syllabus of the Final Examination, which the Council hoped would encourage the higher training of Candidates intending to practise in the chemistry and bacteriology of foods, water, sewage and effluents, or in the applications of chemical and biological science to brewing and other industries as follows:—

- (b) Biological Chemistry as applied to questions affecting Public Health, with special reference to the Chemistry and Bacteriology of Foods, Water, and Sewage. The practical applications of Biological Chemistry to Industries.

The importance of this branch was clearly illustrated a few years later by the appointment of additional chemists to River Boards under the Local Government Act and Rivers Pollution Act; while the Royal Commission on Sewage Disposal, which was appointed in 1898, and is still pursuing its investigations, possessed its own chemical staff and recommended the employment of chemists in connection with the scheme advocated in its Reports.

Candidates intending to enter for the Final Examination in this branch were recommended to take (after passing the Intermediate Examination or other examination qualifying for admission to the Final), a special course including the study of the Morphology and Physiology of Micro-organisms, and their relationship to public health, agriculture and industry, with practical work to include microscopy, the preparation, staining, mounting, drawing, and recognition of specimens; the preparation and study of pure cultures; the conduct of fermentation experiments and the study of chemical changes brought about by bacteria, moulds, yeasts, etc. The House Committee was requested to consider and report as to the arrangements necessary for conducting the new examination. (See p. 152.)

At the same meeting, the Council added to the syllabus of the Intermediate Examination further requirements with regard to experience in the use of such instruments as the spectroscope and microscope. 1899.
REGULA-
TIONS.

In the year 1899, the Council recorded with deep regret the death of Sir Edward Frankland, the first President of the Institute, which occurred on August 9th, at Golaa in Gudbrandsalen, Norway. Dr. Stevenson, in his address to the Institute, delivered a few months later, said :— DEATH OF
SIR EDWARD
FRANKLAND.

“ Our first President, Sir Edward Frankland, K.C.B., F.R.S., is no longer among us. He died full of years and honour, having retained his vigour and his unabated interest in the welfare of the Institute to the last. Indeed, he may be said to have died in harness, for at the time of his death he was an active, wise and valued Censor, whose advice was not infrequently sought, and whose judgment always carried the utmost weight. His fame and his scientific achievements it is not for me to recount. I would rather refer to the aid he rendered in founding, building up, and fostering the progress of the Institute—a work which will ever keep his name and memory honoured among us. His keen intellect, his vast stores of knowledge, his consummate tact and courtesy, his high standard of professional honour, and his universal patience in dealing gently and kindly with opponents, made him a tower of strength and a prince of professional chemists.”

At the fourteenth Annual General Meeting—the twenty-second since the foundation—held on March 1st, 1900, Dr. Stevenson, in his final address, reviewed briefly his period of office, dealing chiefly with the establishment of the examinations for public analysts and for biological chemists, the increasing stringency of the regulations for the admission of members, and the improved status of the profession. The mutual help which members had been able to afford one another, and their association for a common object had done much good. He remarked on the higher tone, the more cordial co-operation and goodwill generally prevalent among chemists then as compared with a quarter of a century earlier. TWENTY-
SECOND
ANNUAL
GENERAL
MEETING.

JOHN MILLAR THOMSON: PRESIDENT, 1900—1903.

TWENTY- SECOND ANNUAL GENERAL MEETING.

At the same meeting, Prof. John Millar Thomson, F.R.S., was elected President. He had been actively associated with the work of the Institute from the foundation, had been for four periods a member of Council, and two periods a Vice-President, had held office as an Examiner, and since 1892, had occupied the position of Honorary Registrar. His invaluable services well merited the highest recognition the Institute could confer upon him.

REGISTRAR AND SECRETARY.

At the Council Meeting following the Annual General Meeting, Mr. Pilcher was elected to the combined appointment of Registrar and Secretary.

PUBLIC ANALYSTS.

In March, 1900, the formal recognition of the qualifications and examinations of the Institute in connection with the appointments of public analysts—already mentioned—was duly incorporated in the Regulations as to Competency of Public Analysts, published by the Local Government Board, and issued to the local authorities under the Sale of Food and Drugs Acts.

BUTTER- FAT IN MARGARINE.

In the same year, at the suggestion of Dr.—now Sir—Edward Thorpe, then Principal of the Government Laboratories, the following Fellows of the Institute were appointed to confer with him as to the method of determining the percentage of butter fat in the fat of margarine:—Messrs. A. H. Allen, E. J. Bevan, W. W. Fisher, and Otto Hehner. As a result an official method was devised and adopted.

REGULA- TIONS AND EXAMINA- TIONS.

During the presidency of Prof. Thomson, the Council devoted particular attention to the educational side of the work of the Institute. The regulations were carefully revised in 1900, but no very marked change was made, although considerable discussion took place as to the desirability of continuing the Final Examination in Branch (c), Physical Chemistry. Some members were of opinion that it was not the function of the Institute to examine specially in that branch, but that every candidate should be conversant with the principles of the subject. In view, however, of the increasing applications of



[Wm. Whiteley, Ltd.]

JOHN MILLAR THOMSON, LL.D., F.R.S.
Hon. Registrar : 1894—1900. President : 1900—1903.

physical chemistry to industrial problems, the branch was retained.

1900.

In September, 1900, Prof. Percy Frankland, who had been very largely responsible for the institution of the examination in Biological Chemistry, presented one hundred guineas to provide apparatus necessary for the proper conduct of the examination. The arrangements were completed in June, 1901, when Prof. Adrian J. Brown, of Birmingham University, was appointed Examiner in that Branch, and the first examination was held in the following October.

The entries for the Intermediate and Final Examinations had been steadily increasing, ninety-one candidates being examined in the twelve months ending March 1st, 1901.

In December, 1900, a Public Dinner was held at which the principal guest was Lord Alverstone, Lord Chief Justice, who in proposing the toast of the Institute said that it was an illustration of the great movement towards organisation which had taken place in every learned profession during the last half century. He congratulated analytical and consulting chemists on being included in the list of learned examining bodies. Fifty years ago there had been scarcely any institution that examined, but it was now recognised that it was not right that men should practise in highly cultivated professions without qualification. It was especially desirable that men should be qualified for chemistry. As an outsider, but one who had had experience of the valuable work that chemists could do, and who knew the immense advantage thus accruing to commerce, he rejoiced that the standard of the Institute was so high, and that it registered so large a number of qualified men.

The fifteenth Annual General Meeting—the twenty-third since the foundation—was held on March 1st, 1901, when Prof. Thomson delivered an Address in which, after referring to the work of the year, he dealt with the progress of chemical education. Representing the opinions of a professor who had from the foundation of the Institute encouraged many students to prepare for the Associateship, this portion of the Address has been abstracted at some length, particularly in view of the growing influence of the work of practising

TWENTY-
THIRD
ANNUAL
GENERAL
MEETING.

1901.

professional chemists on the progress of higher chemical education.

PROF.
THOMSON'S
ADDRESS.

In earlier times what was called " Practical Chemistry " had been largely taught by demonstration alone ; individual work was but little encouraged, and the influences under which the developing professional chemists came were either of purely scholastic character on the one hand, or purely commercial on the other : except in rare instances, the fusion of the two was unknown. Placed in works, a young man might pick up what he could ; but little attempt at organised instruction was made. The influence of professional chemists other than teachers was of great value, and its importance in the future applications of chemistry to industrial purposes could not be overestimated. It was largely reserved to the Institute to recognise the relations which ought to exist between teachers and other professional chemists. The growth of these relations in later times was fostered by the high standard of scientific ability of many of those who had devoted themselves to the chemistry of industrial processes. Whereas in the past, the professional chemist had to go to the professor for advice and information, the reverse had become more often the case. It was highly important that the recognition of this fact should be allowed to exert its due influence in the field of education. A thorough grounding in the principles of a subject should precede the successful application of those principles, and the application exerted a profoundly modifying and enlarging effect on the very principles which gave them birth. The Institute, therefore, had done wisely in bringing practical men to take an active interest in the education of beginners.

Enthusiasm for technical education had in many cases led people to ignore the value of general education, the immediate application of which could not, in the nature of things, be apparent during the course of that education. On the other hand, the reaction against early specialisation had perhaps blinded its opponents to the growing necessity of realising that the methods of presenting science to the learner were not fixed and unalterable, but in constant want of revision if they were to be suited to the requirements arising from the fuller knowledge which came from experience. The extended experience of professional chemists had given to many a clear understanding of the kind of knowledge which young men should acquire if their work in life was to assist in the further development of industrial processes ; while it was the exception for the teacher to have opportunities for personal experience of the needs of chemical industries, and his services in that direction, which at one time were the only available ones, year by year became less necessary. It was, therefore, more and more advisable—in order to prevent waste of time, money, and energy—that the relations of the teacher and the technically experienced chemist should be made closer and more interdependent in the matters of education. " Pure " and " applied " chemistry were but aspects of one and the same subject : to pay attention to either aspect, to the neglect of the other, was to follow an abstraction, and could but result in impoverishing the reality and in retarding its progress.

The purely scholastic method of teaching was rapidly passing away, but it would be a bad thing if, in hurrying its departure, sight was lost of what was valuable in it, and disconnected and mechanical specialism were allowed to take its place. There need be no danger of this if constant opportunities were made for the friendly interchange of views between teachers and professional chemists : such interchange of opinions would be of benefit to both parties and to the student.

Chemists connected with industries would be glad to avail themselves of the services of advanced students whose accuracy could be relied on and who could with advantage to themselves devote some time to carrying out the laboratory details of researches which the professional chemist might be anxious to have completed. The effect upon the student would be good, and if not allowed to become operative *too early in his career*, would increase the value of any professional services which he might subsequently have the chance of offering. The educational value of research work was of the highest, but the growing tendency to exalt that value unduly was to be deprecated. There was a great difference between research work based on a good knowledge of the work of the past and research which led only to a certain measure of mechanical skill and a knowledge of unconnected facts. To start a student too early in his career on research work would, except in a few brilliant examples, be to waste both time and energy; for until the student had received training in the systematic study of known facts he had no groundwork to go upon. He could not learn the lessons which research work could teach him, without rediscovering for himself truths which had been established already in the history of the subject; and although it might with some justice be said that this process of rediscovery impressed those truths firmly in his mind, the time occupied must be so long that the final result amounted in the aggregate to a considerable waste of the energy expended by others in the past. Although research work should rightly be an end in view there were other factors in education which could be employed in early training, as a means to that end, more usefully than the disconnected application of the end itself. In industrial competition, success would in the long run be with those who brought the fullest knowledge to bear upon their enterprise; and if younger chemists were to do good and useful service to their country, they should be assisted by those to whom experience had revealed the directions for future developments.

The Institute by its examinations and its requirements with regard to training was exerting an increasing influence on chemical education. The Council realised the necessity for constant and careful revision of the examinations, and appreciated the opportunities of gaining for students valuable advice and encouragement from professional members. So long as cordial relations in this direction were maintained much saving of energy would result; for the most experienced teacher in technical subjects would soon find it difficult to keep abreast with the latest applications of his subject, unless he were free to consult men engaged in applying the principles he was teaching.

By keeping the educational side of the work of the Institute in view and by recognising that its chief business was the promotion of the fitness of its students to become members, the interests of the Fellows and Associates would be studied in the best and most lasting manner.

In April, 1901, the Council took further steps to ensure the competency of Fellows and Associates intending to become public analysts, by requiring candidates for the examination in Therapeutics, Pharmacology and Microscopy to produce evidence that they had been engaged for at least one year in the practice of the analysis of food and drugs. Further

1901.

PROF.
THOMSON'S
ADDRESS.

PUBLIC
ANALYSTS.

representations were made to the Local Government Board with reference to the tendency on the part of local authorities to combine medical and analytical appointments. Attention was directed to the importance of requiring adequate evidence of special training and experience from any person nominated for appointment as public analyst. Medical practitioners, as such, could not be expected to be able to deal efficiently with such problems as a public analyst had to encounter, and when it was proposed to combine the appointments, the selection of candidates for the two positions was necessarily limited. The nature of the duties of a medical officer was such as to require at times his entire attention (as, for example, in the event of epidemics) ; consequently, where the appointments were combined, his work as public analyst would be neglected, and the effective working of the Sale of Food and Drugs Acts obstructed.

It was considered doubtful whether such combined appointments were strictly legal, and it might reasonably be inferred from section 13 of the Act of 1875 that they were not contemplated when the Act was passed :—

38 & 39 VICT., CHAP. 63.

13. Any medical officer of health, inspector of nuisances, or inspector of weights and measures, or any inspector of a market or any police constable under the direction and at the cost of the local authority appointing such officer, inspector, or constable, charged with the execution of this Act, may procure any sample of food or drugs, and if he suspect the same to have been sold to him contrary to any provision of this Act, shall submit the same to be analysed by the analyst of the district or place for which he acts, or if there be no such analyst then acting for such place, to the analyst of another place, and such analyst shall, upon receiving payment as is provided in the last section, with all convenient speed analyse the same and give a certificate to such officer, wherein he shall specify the result of his analysis.

The section clearly indicated that the medical officer of health and public analyst should be two distinct persons. It also provided an additional reason why the medical officer of health of a district should not also be the public analyst, since the medical officer was one of the persons whose duty it might be to take samples for analysis or procure their being taken and it was inadvisable that the person who procured samples suspecting them to have been sold contrary to the

Act, should also be the person to whom they were entrusted for analysis.

In connection with the appointment of a medical officer of health, the Local Government Board had the advantage of the advice of the medical officer to the Board ; but in connection with the appointment of a public analyst, which was not a medical appointment, and could only rightly belong to the profession of analytical and consulting chemistry, there was not attached to the Board any officer technically conversant with the qualifications necessary for the proper conduct of the practice of an analytical and consulting chemist.

In reply to the Council's representations, a letter was received from the Board stating, that although they had not encouraged the holding of the two offices by the same person, they were not prepared to lay down a general rule that the two offices should not be held together. The Council, however, had reason to believe that their action in the matter would be beneficial ; since then the number of such combined appointments has steadily diminished.

In July, the Council received a notice from the Board of Agriculture to the effect that the Right Hon. R. W. Hanbury, M.P., President of the Board, and the Right Hon. Horace C. Plunkett, Vice-President of the Department of Agriculture and other Industries and Technical Instruction for Ireland, had appointed a joint Departmental Committee to enquire and report as to what regulations, if any, might with advantage be made under section 4 of the Sale of Food and Drugs Act, 1899, for determining what deficiency in any of the normal constituents of butter, or what addition of extraneous matter, or proportion of water in any sample of butter should, for the purpose of the Sale of Food and Drugs Acts, raise a presumption, until the contrary was proved, that the butter was not genuine. Prof. Thomson, as President of the Institute was appointed a member of the Committee, and the Council were invited to nominate a witness to give evidence on the subjects referred to the Departmental Committee. The matter was referred by the Council to a Special Committee, with power to nominate a witness if deemed expedient. After conferring with the officers of the Society

1901.
LEGISLA-
TION.

of Public Analysts, to whom the invitation had also been extended, Mr. Otto Hehner and Dr. Bernard Dyer were appointed, and were heard as the representatives of both bodies.

In the same year, a number of Fellows of the Institute also gave evidence before the Royal Commission on Sewage Disposal.

DINNER.

On December 4th, 1901, Prof. Thomson presided at a Public Dinner held by the Institute, at which the Rt. Hon. R. W. Hanbury, M.P., was present. In responding to the toast "The Houses of Parliament" he remarked that the Government owed a great deal to scientific men, though so few of them had been on the Privy Council. Agriculture especially was greatly in debt to the chemist, and he thought that no profession required so much all-round knowledge. He thought, however, that if science could be tempered with practice and the "hideous terminology" which frightened farmers could be done away with, it would be for the ultimate benefit of the country at large.

CHAIRMEN OF
COMMITTEES.

In consequence of the increasing business of the Institute, and partly with a view to relieving the President from the responsibility and arduous duty of presiding at the meetings of every Committee, the Council appointed a separate Chairman for each Committee.

LOCAL
RATES.

The Council at this period had under consideration the position of the Institute with regard to the Scientific Societies Act, 1843, under which societies existing exclusively for purposes of science, literature, or the fine arts, might be exempted from paying local rates on obtaining a certificate from the Registrar of Friendly Societies, provided that the premises of the society were occupied by the society for the transaction of its business; that the society was supported wholly or in part by annual voluntary contributions; and that it did not, and by its laws could not, make any dividend, gift, division, or bonus in money unto or between any of its members. The Council communicated with the Registrar of Friendly Societies on the matter, but the reply received was to the effect that the objects of the Institute appeared by the Charter to include professional purposes, as in the case of the Institution of Civil Engineers, whose case in this

connection was held to represent the law in the question, and that under the provisions of the Charter and Bye-Laws, the Institute did not appear to come within the meaning of the statute in question. 1901.

On December 10th, 1901, the President and Miss Thomson (Mrs. Frank Makepeace) invited the Fellows and Associates to a *soirée* at the Galleries of the Royal Society of British Artists, at which there was a large and representative gathering. SOIRÉE.

At the sixteenth Annual General Meeting—the twenty-fourth since the foundation—held on March 3rd, 1902, Prof. Thomson reviewed the gradual development of the standard of the examinations and commented on the work of the Institute generally. TWENTY-FOURTH ANNUAL GENERAL MEETING.

He showed how the Institute had been the means of binding together men who were engaged in the applications of chemistry. Until the foundation of the Institute, consulting analytical and technological chemists had not been classed as a profession, but they had since required distinct professional standing. The Institute had undertaken the duty of seeing that the men who intended practising the profession in its highest aspects were thoroughly trained, and of regulating that training. As a result of such training and of its examinations, it gave a guarantee to the public that its members were properly trained and competent men.

In 1901 and 1902, the Council received representations from several professors of chemistry with regard to the Regulations for Preliminary Examination, particularly as to the subjects which should be obligatory. The question of retaining Latin as a compulsory subject was one of special interest, and the Council, for the time, decided that it should be so retained. In coming to this conclusion, they were guided by the desire that any Preliminary Examination approved by the Institute should be a test of the fitness of the candidate to enter a profession, and not, as in the case of the Matriculation Examinations of Universities, a test to ascertain the fitness of a candidate to enter on a course of University instruction. The question was raised from time to time until 1907, by which date Latin had been made optional by the majority of the Universities for candidates proceeding to engineering and science degrees. PRE-LIMINARY EXAMINATION.

Many Fellows and Associates of the Institute being engaged in teaching chemistry, a communication was addressed to the Board of Education, in 1902, to ascertain the position of

1902.

PRE-
LIMINARY
EXAMINA-
TION.

the Diplomas "A.I.C." and "F.I.C." in their relation to the Registration of Teachers under the Education Act, 1899 (section 4), and the Order in Council of March, 1902. The reply received from the Board was to the effect that chemistry was not a subject for which a Supplemental Register of Teachers had been approved by the Board. Later, however,—in February, 1903—the Teachers' Registration Council, of which Prof. Meldola was one of the Crown nominees and Treasurer, and which has since been discontinued, formally recognised "A.I.C." and "F.I.C." as additional registrable qualifications.

LEGISLA-
TION.

The Council frequently considered the trend of legislation bearing on the interests of the profession of chemistry, and about this time there was observed to be, in Parliamentary Bills and other official publications, a tendency on the part of Government Departments and other authorities to regard the bacteriological examination of water, milk and other foods, as falling solely within the practice of medical men; the attention of the Local Government Board and the Board of Agriculture was therefore specially directed to the fact that chemists were encouraged to undertake this branch of laboratory work and also that the Institute held examinations in Biological Chemistry. A few months later, in order to encourage chemists to take up the systematic study of bacteriology and biological chemistry, the Council decided that the examination should in future be open also to Fellows and Associates who desired to obtain a certificate of competency in that branch of work.

EXAMINA-
TIONS.

With the steady advance of the science of chemistry, it was becoming increasingly difficult for the Examiners to conduct examinations of a specialised character, and the Council, therefore, empowered the Examiners to call in special assistants in connection with the various branches of the Final Examination, this arrangement remaining in operation until the appointment, in 1907, of a Board consisting of members with experience in the various branches.

TECHNICAL
EDUCATION.

In 1902, there was a stir in the industrial community on account of the increasing influence of foreign competition. The London County Council appointed a Sub-Committee to investigate and report on the application of Science to Industry

and their Report was published in July, 1902. No fewer than ten Fellows of the Institute were heard as witnesses before the Sub-Committee, and the recommendations in the Report with regard to general education and training of a leader of a scientific industry were somewhat analogous to the requirements for membership of the Institute.

1902.
—

The Sub-Committee came to the conclusion that various branches of industry had, during the previous twenty or thirty years, been lost to this country owing to the competition of foreign countries. They expressed their opinion that the main causes of the relative failure of British manufacturers, in the chemical, optical and electrical industries, were (a) the lack of scientific training of the manufacturers themselves and their inability to recognise the importance of scientific assistance; (b) the defective condition of secondary education in this country and the lack of sufficiently prepared recruits for advanced technological training; (c) the lack of a sufficient supply of young men who had been trained in scientific principles and methods and in the application of science to particular industrial processes; and (d) the lack of any institution sufficiently equipped and endowed to enable it to give adequate attention to advanced technological training.

Referring to Science training in the secondary schools, the Sub-Committee stated that scientific industries had suffered in England not only through defects in higher scientific training, but to an even greater extent through defects in general and secondary education. In the majority of secondary schools, the curriculum had been so hampered by the exigencies of examining authorities and of examinations that the teachers had been compelled to devote undue attention to storing the minds of the students with facts for reproduction, at the expense of the time which should be devoted to stimulating their reflective powers and making them think. The outcome of the system was that boys who learned Science did not acquire the power of original, or even of accurate, logical thought, and that those who did not learn Science had no belief in its practical value. Those who entered on industrial pursuits too often regarded Science with distrust, and to some extent this distrust was merited owing to the insufficient preparation and training of those who offered themselves for responsible posts in scientific industries.

The Sub-Committee stated that they had been impressed with the need for providing increased and more accessible opportunities for the young chemist, electrician, and engineer. This need was partly met by the evening work of the Polytechnics, but there was a consensus of opinion that the highest grade of technical education should be carried on in institutions of University rank open during the day. The institutions of University rank in London were hampered by deficient endowment, deficient accommodation, deficient teaching power, deficient equipment, and by the deficient preparatory training of the students. Improvement, in their opinion, could be effected partly by co-ordination and partly by securing to the institutions a moderate increase of income from some course, permanently to be relied on. They also regarded it as of importance that the fees at present charged should be greatly reduced.

Dealing with the need for the further development of advanced technology in London, the Sub-Committee expressed the opinion that

1902.

TECHNICAL
EDUCATION.

the greatest need at that time was the co-ordination of the provision for the highest grades of education and the development of new departments, so that professors of the highest distinction and practical training should have under their supervision post-graduate or other advanced students carrying out research. They urged that the education of a leader of a scientific industry should include a good general education on the classical or modern side of a secondary school, up to the age of 17 or 18, three years training at a University as an undergraduate, followed by two years of post-graduate study. Further, the Sub-Committee stated: "It is not enough that he should become trained and proficient in the particular science which is principally applicable to his business. The chemist, for instance, should have a general knowledge of engineering, and the engineer of chemistry."

In reviewing the work of the Technical Education Board the Sub-Committee added: "We feel that the expenditure required to put London in a position to equip itself as well as, say, Berlin, is altogether beyond the range of the sums with which the county council has entrusted the Technical Education Board, and even beyond the amount which it could legally spend on technical education." While not pressing any specific recommendation, they noted especially the need of higher salaries being provided for scientific teachers alike in the secondary schools and in University colleges, the desirability of lowering students' fees at the University colleges, and the importance of continuing scholarships in the case of exceptional students to a later age than was then customary.

In the same year, a Committee of the British Association reported some statistics which they had obtained concerning the training of chemists employed in British chemical industries. Information concerning their course of training was received from 502 managers and chemists employed in chemical industries. Of these, the Committee reported that 107, or 21 per cent., were graduates; 111, or 22 per cent., were Fellows or Associates of the Institute of Chemistry. The statistics were taken from the List of Members of the Society of Chemical Industry, which contained the names of a higher percentage of "works' chemists" than the Register of the Institute, the Fellows and Associates of the latter body being held to be mostly engaged in private practice. Of course, many in private practice were consulting chemists to industrial concerns, but they would not properly be regarded as "works' chemists."

The Proceedings Committee of the Institute published in Part II., 1902, statistics taken from the Register showing the position of members of the Institute in respect of Academic distinctions, Honorary Degrees being for this purpose excluded from the figures. It was found that on October 30th, 1902, the Register contained the names of 1,052 Members: 918

Fellows and 134 Associates. Of these, 254 (24·14 per cent.) had graduated in British, and 94 (8·93 per cent.) in Foreign Universities. Of these 94 Graduates in Foreign Universities, 32 were also Graduates in British Universities. It will be seen, therefore, that 316 (rather over 30 per cent.) of the Fellows and Associates were Graduates in British or Foreign Universities or both. Eighty-four members were recorded as Associates of various colleges, of whom sixteen also held University degrees.

The figures showed that a large proportion of the members of the Institute (considering that much of their work was of the nature of research) had received a training which the Sub-Committee of the Technical Education Board of the London County Council considered should be aimed at in a leader of a scientific industry.

The Proceedings Committee followed up this investigation by collecting information as to the branches of the profession in which the Fellows and Associates were engaged, and the results proved that while at that time the majority of the members were engaged in private practice, the number of those connected with industries was nearly as great. Of 968 Fellows and Associates resident in Great Britain and Ireland, the Committee obtained information in respect of 835, and from the data given it was found that approximately 30·17 per cent. were wholly engaged in private practice, 26·7 per cent. in industries, 16·16 per cent. in teaching, 7·3 per cent. exclusively in Government or municipal appointments; whilst the remainder (19·67 per cent.) being, in the majority of cases, engaged partly in two or more of the various departments of professional work could not be easily classified and were not included in the preceding figures.

These statistics were of particular interest in view of the fact that the Council of the Institute were then about to give special consideration to the training of chemists for industrial practice.

In journals and elsewhere, the initials "A.I.C." and "F.I.C." were occasionally found attached by inadvertence to the names of persons who had no right to them. In such cases no fault attached to the individuals concerned. In other

CHARTERED
SOCIETIES
BILL.

1902.

CHARTERED
SOCIETIES
BILL.

cases of irregular use, the offenders were sometimes ex-members who had allowed their membership of the Institute to lapse. At this period, however, the Council had to deal with an individual, never in any way connected with the Institute, who was discovered to be using the initials "F.I.C." on certificates of analysis and also on the door of his office. On receiving from the offender an apology for the fraud and a written undertaking to cease using the initials, the Council decided to take no further steps in the matter, but they determined that such offences should not be dealt with so leniently in the future. They decided to address other institutions whose diplomas were granted after examination, with a view to secure their co-operation in obtaining further protection for titles conferred under the provisions of Royal Charters. A deputation of representatives interviewed Mr. (now Sir) Almeric Fitzroy, Clerk to the Privy Council, with reference to the matter, and a similar deputation was subsequently—on 2nd March, 1904—received by the Right Hon. Gerald W. Balfour, then President of the Board of Trade, who expressed his approval of the terms of a draft Bill, the object of which was to restrain unauthorised persons from using professional designations and distinctive initials recognised by the public as denoting membership of chartered bodies. The Bill was introduced in Parliament by Sir John Rolleston, supported by Mr. Fletcher Moulton, K.C.—now Lord Moulton of Bank—Sir James Woodhouse, Mr. Alban Gibbs, Sir Francis Evans and Mr. Hunter Craig, and passed the first reading, but, in April, 1904, it was blocked by opposition from bodies which had not received Charters and then withdrawn. As, however, in the course of time, cases occurred in the courts by which recognised qualifications acquired a more definite legal standing, the necessity for legislation became less imperative.

DEATH
OF SIR
FREDERICK
ABEL.

The Council recorded with regret the death of Sir Frederick Abel, the second President of the Institute, which occurred on September 6th, 1902, at the age of seventy-five.

PREMISES.

In December, 1902, the Council received notice from the London County Council to the effect that the premises of the Institute might possibly be required in connection with a

scheme for widening Southampton Row, at the back of the premises. Though it did not then seem probable that the Institute would be interfered with, the Council in acknowledging the receipt of the notice expressed formal dissent to the proposition, as it was hoped at that time that the lease might be renewed. The County Council obtained the necessary powers, but the scheme was deferred and the tenancy of the Institute continued without interruption ; it will be seen, however, that other conditions intervening compelled the Council to take steps to acquire more suitable and permanent headquarters.

At the seventeenth Annual General Meeting—the twenty-
fifth since the foundation—held on March 2nd, 1903—
Prof. Thomson reviewed the history of the Institute from its
inception. This address, which has been utilised in the
compilation of this record, dealt with the various depart-
ments of the work of the Institute and indicated the main
steps in its development up to that date.

1903
—

TWENTY-
FIFTH
ANNUAL
GENERAL
MEETING.

DAVID HOWARD: PRESIDENT, 1903—1906.

1903.
—
TWENTY-
FIFTH
ANNUAL
GENERAL
MEETING.

CHEMICAL
TECH-
NOLOGY.

At the Annual General Meeting in March, 1903, Mr. David Howard was elected President. As an Original Fellow, a member of the first Council, a Censor, and Honorary Treasurer since 1884, he had already rendered invaluable service to the Institute, and was the first representative of chemical industry to occupy the presidential chair. Moreover, his election was particularly opportune, as the Council had then under consideration a suggestion received from Dr. E. J. Mills, F.R.S., who had formerly held the appointment of Professor of Technological Chemistry in the Glasgow and West of Scotland Technical College—now the Royal Technical College—that the Institute should encourage the higher training of chemists engaged in industry, by establishing examinations in Chemical Engineering and other branches of Chemical Technology.

In this connection, it should be noted that at the Conference held in May, 1892, one of the speakers—Mr. John Stevenson—apparently held similar views. He proposed that, in addition to passing the ordinary examinations, candidates should be examined in some branch peculiar to their own experience.

Important as was the work of the Institute in connection with analytical and consulting practice, it was regarded as of equal importance that further endeavours should be made to promote the higher efficiency of industrial chemists. A Special Committee was appointed to report on the matter, and their investigations occupied a considerable period of Mr. Howard's term of office.

Since the question was one which primarily affected manufacturers, the Committee were of opinion that no conclusions should be arrived at until many of the principal manufacturers and other persons interested in technical education had been consulted with regard to the qualifications which a technical chemist should possess. Well-known leaders



[Elliott & Fry, Ltd.]

DAVID HOWARD.

Hon. Treasurer: 1884—1903; President: 1903—1906.

of industry and teachers of technological subjects were invited to express their views, and were asked in what respects the education then afforded to works' chemists failed in giving the necessary knowledge, and what form an examination in chemical technology, if desirable, could best assume.

1903.
CHEMICAL
TECH-
NOLOGY.

Whilst the replies indicated that the work of the Institute had been greatly appreciated, they pointed almost without exception to a desire for the establishment of a special examination. Since a sound and broad training in pure chemistry and physics was of primary importance to works' chemists, it was agreed that the examinations should be "post-graduate," opinions being adverse to young men specialising too early in particular branches of work. A large number of manufacturers emphasised the view that they did not want chemists whose training and examinations had been confined to the technology of a particular industry, but those possessing knowledge, as wide as possible, of chemical processes generally. Apart from the undesirability of multiplying examinations—by establishing one in connection with each important industry—the Committee were advised that the proposed examination should be mainly concerned with the application of chemistry to all ordinary operations on a large scale as practised in industries.

The Committee received many valuable suggestions, and, after full discussion, submitted a report recommending the establishment of a special examination, together with a scheme largely based on the opinions received. The report with an outline of the examination scheme was published in the *Proceedings*, Part I., 1904, after which it was widely circulated with a series of suggested questions for further criticism, the consideration of which led to some modification being made.

The regulations for the new examination were eventually adopted in June, 1905, a special Examination Board, with Dr. Ludwig Mond as Chairman, being appointed and empowered to examine or to employ Examiners as they thought fit.

The Council decided that the Examinations should be open only to Fellows, and to those Associates who had been registered as such for at least one year; that candidates should be required to produce evidence of practical technical

training, and that the examinations should comprise the following :—

- (a) The application of well-known chemical and physical laws to industrial operations.
- (b) The development, control, and transmission of power and heat.
- (c) A working knowledge of operations and plant, of which general use is made in industrial works for the treatment and handling of materials, finished products, waste products and effluents, including a practical acquaintance with fittings and stores.
- (d) The properties of materials affecting their application to the construction of plant and apparatus in chemical works.
- (e) Some ability in interpreting drawings of chemical plant and in making dimensioned rough sketches.
- (f) The calculation of working costs, and a general knowledge of the clerical work connected with manufacturing operations.

The Council decided that each candidate should be required to select one important industry by which his knowledge of the above subjects could be tested. Questions which might involve the disclosure of unpublished processes and details of plant in particular works would not be asked. All candidates would be expected to give evidence of a general knowledge of chemical technology, and the Examiners were required to take into account original work and special knowledge, but not so as to excuse the candidate from any part of the examination.

The Council endeavoured to indicate the extent of the knowledge a candidate for the examination should possess. It was expected that the Fellow or Associate who, by his previous examinations and work, had proved that he possessed the theoretical knowledge necessary for his profession and was efficient in practical laboratory work, should show that he appreciated the industrial applications of his science and that by practical experience he had acquired the habit of thinking and working on a large scale. He should be a chemist, with so much knowledge of chemical technology and engineering, that he could intelligently and economically supervise manufacturing operations and, when suggesting improvements in new manufactures, advise as to the apparatus and machinery required.

The Council desired to encourage chemists to take post-graduate training and to gain practical experience ; also, to urge universities and technical colleges to establish courses

of instruction in chemical technology under teachers of experience and in suitably equipped workshops. Steps in this direction were being taken in various parts of the country, and, in some instances, provision had already been made for teaching the methods of applied chemistry on a fairly large scale.

1903.

The Council acknowledged their indebtedness to a large number of manufacturers and others interested in technical education who had taken an interest in the work of the Special Committee, and had given their advice on this important matter. At the same time, the Council asked for the further co-operation of manufacturers, hoping that they would encourage the scheme by allowing "post-graduate" students to visit their works. The first examination in Chemical Technology was held in October, 1906. (See p. 200)

Early in 1903, it was represented to the Council of the INDIA. Institute by Sir Edward Fitzgerald Law, Financial Member of the Council of India, that authorities in the Indian Empire experienced, from time to time, considerable difficulty in securing the services of properly trained and competent chemists. The Council recognised that they might afford assistance in promoting the education and examination of chemists for appointment under the Government of India, and, therefore, approached the Government through the Secretary of State, recommending that the higher chemical appointments should be filled by the selection of specially qualified chemists. The Council were prepared to consider applications for the recognition of Indian universities and colleges; and undertook to hold, in India, examinations of candidates who had complied with the Regulations, provided always that the proper conduct of such examinations could be as fully guaranteed as in the laboratories of the Institute. The suggestions of the Council were duly forwarded to the Government, who, in their reply received early in 1905, intimated that vacancies in the Chemical Examiners' Departments were usually filled from the Indian Medical Service, and informed the Council that the following resolution had been forwarded by the Government to the Provincial Governments and Administrations, the Finance and Military

1903.
INDIA.

Departments, and the Director-General of the Indian Medical Service :—

“ With the view of encouraging officers of the Indian Medical Service to qualify in chemistry, the Government of India have decided that in selecting a probationer for the Chemical Examiner's Department preference shall *ceteris paribus* be given to an officer who has passed the Intermediate or Final Examination of the Institute of Chemistry of Great Britain and Ireland or any equivalent examination ; and that for appointment as chemical examiner preference shall *ceteris paribus* be given to a probationer who is in possession of the diploma of Fellow or Associate of the Institute of Chemistry of Great Britain and Ireland or any equivalent degree or diploma.”

The Government of India asked the Council whether they would be willing to relax any of the Regulations in the event of an officer of the Indian Medical Service desiring to take the examinations. After full investigation into the courses of training given at the Royal Army Medical College, the Council found they were unable to formulate a definite regulation for such cases, but resolved to decide each application on its merits. A reply to this effect was communicated to the India Office, the Council expressing, at the same time, their appreciation of the desire of the Government authorities to promote the efficiency of professional chemists in India.

HON.
TREASURER.

On the election of Mr. Howard as President, the Council nominated Mr. Alfred Gordon Salamon, who had been, for several years, Chairman of the Library Committee, as Honorary Treasurer, and he was duly elected to that office at the Annual General Meeting. Questions affecting the financial position of the Institute were then under the consideration of the Council, and Mr. Salamon spared no pains in dealing with them, taking a prominent part in the deliberations of the Committee to which they were referred.

FINANCES.

Thus, in March, 1903, a Special Committee was appointed to consider the desirability of taking steps to replace, in the case of members elected in the future, the payment of an annual subscription, by the payment of a capital sum in two or more instalments. The Committee were also instructed by the Council to consider and report on the examination fees. The Committee recommended the Council to take no step to enforce the payment of life compositions ; they suggested, however, that the Council should consider the



ALFRED GORDON SALAMON, A.R.S.M.
Hon. Treasurer since 1903.

advisability of introducing a scale of composition fees, and, in view of the increasing work and expense on behalf of students and candidates, they recommended certain alterations in examination fees, to apply in the cases of all who were not registered as students, or accepted as candidates for examination, before January 1st, 1904. The Council adopted the schedule of examination fees suggested, and a circular giving notice of the alterations was issued to Fellows, Associates and Students, and to the universities and colleges recognised by the Council. On the recommendation of the Finance Committee, the Council also adopted a schedule of life compositions, based on the age and period of membership of the Fellows,* and instructed the Treasurer to invest annually in January the amount of the life compositions received. These changes not only placed the Institute in a sounder position financially, but enabled the Council in the course of a few years to develop its work in various directions.

1903.
—

The Institutions of Civil Engineers, Mechanical Engineers, ENGINEERING STANDARDS. Naval Architects, Electrical Engineers, and the Iron and Steel Institute, had appointed, in 1901, an Engineering Standards Committee to introduce into this country a national system, including the preparation of standard specifications for engineering works, of standard sections of rolled iron and steel, the standardisation of parts of locomotives and of electrical appliances. The work of the Committee was aided by a Government grant, and by contributions from institutions and manufacturers. No fewer than twenty-seven committees were engaged in this important work. In April, 1903, the Engineering Standards Committee referred to the Council of the Institute a suggestion that the Committee should formulate standards of purity for chemicals used in analysis. The Council replied that analysts usually tested the chemicals they employed, the standard of purity required varying according to the nature of the investigation. Subsequently, however, when they were asked to nominate a Fellow to represent the Institute on the sub-committee appointed to

* Later, in 1910, the Council adopted a suggestion that Life Compositions should be payable by instalments, provided that Fellows taking advantage of this regulation completed the necessary payments within one financial year.

1903.
ENGINEER-
ING STAN-
DARDS.

deal with the question of the standardisation of cement tests, Mr. Bertram Blount was appointed, and rendered valuable service which was duly acknowledged; and, in 1910, in response to a request from this Committee the Council appointed Mr. William Thomason to represent the Institute on a Sub-Committee for the Standardisation of Vitrified Stoneware Pipes. The Sub-Committee have only quite recently arrived at a decision in this matter. The reference to the main Committee has been considerably widened in recent years, and several Fellows of the Institute have been actively connected with the work.

EXAMINA-
TIONS IN
METAL-
LURGICAL
CHEMISTRY.

In July, 1903, the Council decided, in view of the progress of metallurgical chemistry, especially in the direction of electrometallurgy, metallography and pyrometry, that the laboratories of the Institute were not suitably equipped for the Final Examination in metallurgical chemistry. The examination in this branch was therefore held at the Royal School of Mines by the courtesy of the Board of Education and Professor W. Gowland. In order to encourage metallurgical chemists to become members of the Institute, a special regulation was adopted, whereby Associates (in metallurgy) of the Royal School of Mines, who had passed an approved preliminary examination and had, since obtaining the diploma, been systematically trained in chemistry for six months in an institution recognised by the Institute were accepted as eligible for the Associateship of the Institute on passing an examination in general theoretical and practical chemistry.

Later, in July, 1904, the Council considered the cost of fitting the laboratories of the Institute for examinations in metallurgical chemistry, but the proposal was not adopted owing to the expense involved, and the Council have since been repeatedly indebted to the authorities of the Royal School of Mines—now forming part of the Imperial College of Science and Technology—for the necessary accommodation.

DEATH OF
MR. G. H.
ROBERTSON.

In the same month the Council recorded with regret the death of Mr. George Henry Cromwell Robertson, to whose services as Registrar and Secretary (1892—1893) reference has already been made.

CENSORS

In 1903, the Council discussed the procedure adopted by the Censors in dealing with complaints of unprofessional

practice. The Censors submitted the matter to the consideration of the Solicitors of the Institute, and their course of action was ascertained to be in accordance with the Charter and Bye-Laws. Reference will be made to the duties and work of the Censors in a special section dealing with the constitution and management of the Institute.

1903.

In October, 1903, the Council appointed Dr. F. D. Chattaway and Professor J. Millar Thomson, Vice-Presidents, to represent the Institute at a conference held on December 4th, at the Offices of the Board of Education, South Kensington, to consider the question whether it was desirable and feasible to institute for secondary schools in this country a general system of Leaving Examinations of such a nature as to be acceptable in lieu of the preliminary examinations required for admission to the various professional bodies. In the following year, the Council considered a letter from the Board of Education asking their opinion on a proposed scheme of school examinations. The Consultative Committee of the Board recommended that a scheme of examinations for school certificates should be established to take the place of the many professional preliminary examinations; that a Central Board should be constituted for England, consisting of representatives of the Board of Education and of the different examining bodies, to control the standard of these examinations, and that the proposed examinations should be under the control of independent external examiners, although conducted by internal and external examiners jointly. The suggested scheme provided for the systematic inspection of schools, and that the school record of the candidates should be taken into account. As far as could be judged, the proposed examinations aimed at a high standard, even higher in some respects than that of some of the preliminary examinations accepted by the Council of the Institute. The Council approved the scheme and consented to appoint a representative to serve on the Central Board; but, although several universities adopted the system of leaving examinations locally, it has not so far been in operation directly under the control of the Board of Education.

PRE-
LIMINARY
EXAMINA-
TION.

1903.
DINNER.

A public dinner of the Institute was held on December 14th, 1903, Mr. David Howard (President) in the chair.

The President, on this occasion, referring to the application of chemical processes in industries, said that there was need for more sound chemistry in this country, although to mention the eminent British chemists then living who had devoted thought to industrial problems would show that we lacked nothing in quality. It should be remembered that there were mysteries of the English law to be grappled with; there was the mystery whereby patents, never intended to be worked, could be secured in order to bar British industries; at that time the British manufacturer paid twice as much for an abominable compound called methylated spirit as the foreigner had to pay for perfectly pure spirit, on which he paid no duty. Most of the successful manufacturers in Germany whom he knew were Doctors of Philosophy and were well-educated men, who had, in addition, devoted their lives to the study of every detail of their work. It should be realised that the British technical chemist should be at least as well educated and thoughtful as his German friends. It was in the thoroughness of the training of British chemists that industries must look for help in their difficulties.

INDUSTRIAL
ALCOHOL.

The President's remarks on the occasion of this dinner are worthy of note in view of subsequent events which, however, are not directly connected with the history of the Institute. In the following year, the Chancellor of the Exchequer appointed a Committee to inquire into the use of duty-free alcohol for industrial processes. The Committee included Sir William Crookes, Dr.—now Sir Edward—Thorpe, and Mr. Thomas Tyrer. The terms of reference were:—

“To inquire into the existing facilities for the use, without payment of duty, of spirits in arts and manufactures, and, in particular, into the operation of section 8 of the Finance Act, 1902; and to report whether the powers conferred upon the Commissioners of Inland Revenue by this section permit of adequate facilities being given for the use of spirits in manufactures and in the production of motive power, or whether further facilities are required; and, if it should appear to the Committee that the present facilities are inadequate, to advise what further measures could be adopted without prejudice to the safety of the revenue derived from spirits and with due regard to the interests of the producers of spirits in the United Kingdom.”

The proceedings of the Committee, which were of much interest to Fellows concerned with chemical industries, extended until April, 1905, when the Report was presented. The recommendations were embodied in a Government Bill, which was passed without much modification, the object of the measure being to place British manufacturers, in respect

of the use of alcohol in industry, on a footing of equality and in some respects of advantage, as compared with competitors abroad, by the removal of heavy duties by which they had hitherto been unduly fettered.

At the same time, the Board of Inland Revenue was empowered to frame regulations providing manufacturers with a much purer industrial methylated spirit than was previously allowed, and in special cases to allow the use of pure spirit as far as it could be done without imperilling the revenue.

1903.

In January, 1904, the Council appointed a Special Committee INSTITUTE to consider the advisability of increasing the number of TIONS. institutions recognised for the training of Candidates for membership of the Institute and to indicate on what conditions such recognition should be granted. The Committee suggested certain conditions under which Institutions should be so recognised, and recommended the appointment of a Standing Committee to consider applications.

The Council adopted the report and resolved that no Institution be placed on the list which, in the opinion of the Council, could not carry out systematically the prescribed three years' course of training of university standard; further, that no Institution be added to the list of those already recognised except on the following conditions:—(1) That, at such times as the Council might see fit, they should be permitted to send representatives to inspect the chemical and physical laboratories of the Institution, and (2) that, where any change affecting subjects within the Regulations was made in the staff, recognition be suspended until such change had been approved by the Council.

At the same time, the Council were of opinion that, while the Institute granted admission to candidates who had taken the Degree of B.Sc., irrespective of their place of training, such candidates would lose nothing by the institutions not being recognised; and, when a number of such candidates had presented themselves for the Institute's examinations from any college not formally recognised, the Council would have good reason to consider an application for the recognition of the college.

1904.
 TWENTY-
 SIXTH
 ANNUAL
 GENERAL
 MEETING.

At the eighteenth Annual General Meeting—the twenty-sixth since the foundation—held on March 1st, 1904, Mr. Howard, in his address, commented on the increasing number of candidates for the examinations.

He referred also to the attention which the Council had given to the finances of the Institute; they had found it necessary to raise the fees for the examinations which had hitherto been conducted at a heavy loss. It had always been felt that the maintenance of the efficiency of the examinations was a primary duty of the Institute, and in endeavouring to organise the profession—by bringing together the properly trained and competent—it had been necessary for the Institute to afford all possible facilities for this object. Mr. Howard showed how the Institute had specially provided a qualification for public analysts. He mentioned incidentally that in England and Wales 93·5 per cent., in Scotland 89·5 per cent., and in Ireland 84·7 per cent. of the appointments as public analysts, under the Sale of Food and Drugs Acts, were then held by Fellows of the Institute. Commenting on the work of the Special Committee which had been appointed to consider the question of holding examinations in chemical technology, he said that, hitherto, no special provision had been made in respect of the training and examination of technical chemists. The difficulty was to bridge over the gap between the scientific training and the practical work of the technical chemist; he had to learn to think in tons instead of grammes.

It had been found impossible to adopt all the suggestions received, and this was scarcely surprising in view of the variety of industries concerned, each manufacturer laying emphasis on those requirements which were most useful to his particular business. It was gratifying to know that in this investigation the Institute could rely on the co-operation of many leaders of industry, among whom were iron-masters, alkali, acid, and general chemical manufacturers, brewers, cement makers, and representatives of dyeing, calico printing, and other important industries. If it were possible for a chemist to possess all the qualifications recommended, he would be, at once, a moderately competent mechanical engineer, electrical engineer, architect and surveyor, accountant, and bookkeeper, draughtsman, patent agent, and lawyer, in addition to being a capable chemist; and it would be necessary for him to possess also special personal qualities, including the power of organisation, tact and general business capacity. The Institute could not attempt to fulfil this ideal, but the Committee, after studying so important a consensus of opinion, were inclined to think that it was possible so to direct the post graduate studies of the chemist, that he might more readily adapt himself to technical practice, and thus not only improve his own position, but be better qualified to bear his part in the advancement of industry.

LIBRARY.

The Library of the Institute, which had steadily increased since it had been initiated in 1897, received, at this period, several valuable additions, including gifts from Dr. Beilby, Mr. G. E. Davis, Mr. Oscar Guttman, Mr. Cornelius Hanbury, Mr. David Howard, Professor Nevil Storey Maskelyne, The Pharmaceutical Society, and a collection

presented by Mr. Asher Wertheimer, through Mr. A. Gordon Salamon, Honorary Treasurer, who himself presented a set of the *Berichte der Deutschen Chemischen Gesellschaft*, complete from 1868 to 1894, inclusive. 1904.

In 1904, owing to the large number of candidates eligible for the Final Examination, the Council decided to hold an extra examination in April. Examinations were held in the same month at Dublin, and also at the Royal School of Mines; yet, during the first fortnight of July, as many candidates were examined as the laboratory of the Institute could conveniently accommodate. EXAMINATIONS.

In July, Dr. Thomas Stevenson received the honour of knighthood. Although a number of chemists had previously received similar distinction, it was thought that this was the first occasion of its bestowal on an analyst as such, Sir Thomas receiving the honour in recognition of his eminent services as "Senior Analyst to the Home Office"; but, on enquiry at the Central Chancery of the Orders of Knighthood, the Registrar of the Order of the Bath found that Sir Edward Frankland, the first President of the Institute, was recorded "Water Analyst to the Local Government Board" at the time of his appointment as a Knight Commander of the Order in 1897. SIR THOMAS STEVENSON.

With Part III. of the *Proceedings*, 1904, was issued "A List of Public Analysts in Great Britain and Ireland," prepared by the Registrar, together with information relating to the appointment of Public Analysts under the Sale of Food and Drugs Acts. This list was subsequently incorporated in the "List of Official Chemical Appointments," the first edition of which was published in 1906. PUBLIC ANALYSTS.

At the twenty-seventh Annual General Meeting held on March 1st, 1905, the question of retaining Latin as a compulsory subject in the Preliminary Examination was again raised and the Council were asked to give it special consideration. TWENTY-SEVENTH ANNUAL GENERAL MEETING.

The President in his address remarked on the steady growth of the Institute, and the increasing field for chemists possessing the highest

1905.
 TWENTY-
 SEVENTH
 ANNUAL
 GENERAL
 MEETING.

knowledge and skill. Those who had to call in the aid of such knowledge and skill were becoming more and more alive to the importance of employing only properly trained and competent men. The training prescribed by the Institute, and the high standard of the examinations, had resulted in a decided improvement in the status of professional chemists. Fellows of the Institute should be professional men as well as chemists, and should possess that general culture which was essential if they were to deal with their work in a professional spirit. He warmly defended the action of the Council in the retention of Latin in the Preliminary Examination, at any rate until it was made evident that other languages were being taught on lines of equal educational thoroughness.

Referring to matters mentioned in the Report, Mr. Howard alluded to the action of the Board of Agriculture in encouraging provincial technical and agricultural colleges to undertake analyses gratuitously, or at purely nominal fees. In their endeavour to help dairy farmers, the Board had induced colleges, which were maintained by grants for the education of a particular class, to compete with professional chemists, at the expense of the general public. The colleges needed the grants for the promotion of the education of farmers in the science and practice of agriculture without diverting them to other purposes. It was for the colleges to instruct the farmers in agricultural chemistry, and it was certainly not their business to do work for farmers; while if the latter could get it done for nothing, or next to nothing, they would not be likely to do it for themselves. If farmers were to have free analysis, it would be equally reasonable to let them have free veterinary, medical and other advice. The farmers were not the only people who contributed to the education grants. Therefore, he asked, "Why should not the smith have gratuitous analysis of his iron, the dyer of his dyes, the druggist of his drugs, and so forth? Why should we not all be fed with pap—at the public expense—with a Government spoon?" In conclusion, he reminded the members that though they might congratulate themselves on the position the Institute had attained, they should not lose sight of the fact that much of its success had been due to those who had worked for it in its early history. They had realised that, much as chemists had done for the world in the past, still greater things must be done by them in the future, and an organisation such as the Institute should tend to draw them together to work for the common good.

PROFES-
 SIONAL
 INTERESTS.

It has been indicated in the earlier part of this record that professional bodies, when incorporated by Royal Charter are entrusted with duties and responsibilities in the interests of the general community. This is clearly understood when a petition for such incorporation is granted; on the other hand, it is only right that they should be entitled to a hearing when the rights and privileges of their profession are subject to undue interference.

When the Council of the Institute have been called upon to take action in matters affecting the interests of the profession, they have not infrequently been placed in a difficult situation; for while they have felt the justice of the claims of members

affected, that steps should be taken to protect their privileges, it has been not unusual to find that their opponents are apt to resent such interference and to regard the Institute as adopting the functions of a trade union.

It is certain that the majority of the Original Fellows had no thought that the Institute would undertake such functions. They hoped, in the course of time, by the encouragement of the proper education and training, to form a body of men commanding the respect of the public and capable of maintaining the dignity and welfare of their profession. This in the main has been achieved, but some difficulties which beset a comparatively young and numerically small profession can only be met by united action: not so much by agitation as by bringing authorities and the community generally to realise that those who practise chemistry have been through a curriculum at least analogous to, if not more severe than, that required in other learned professions, and are entitled to rank equally with the members of these.

In a profession composed of members practising in different branches of work and under varying conditions, it is not surprising that some who are not directly affected by unfair competition have little sympathy with, if they are not directly opposed to, any such action being taken by the Council, except when the principle involved affects the interests of the profession as a whole.

The competition of State-aided institutions and of municipal bodies in professional practice has been frequently a subject for discussion by the Council, who have viewed this growing tendency with considerable apprehension, because they feel that such practices handicap individual effort to extend and improve the application of chemical science to the needs of the public.

The President, in his address at the Annual General Meeting, had referred to the action of certain agricultural colleges in undertaking analyses at nominal fees, and the Council appealed to the Board of Agriculture for a hearing on the matter. On April 5th, 1905, the President of the Board, the Right Hon. Ailwyn E. Fellowes, M.P., received a deputation from the Institute with reference to the performance of

AGRICUL-
TURAL
COLLEGES.

1905.
 AGRICUL-
 TURAL
 COLLEGES.

analyses, for landlords and farmers, at technical and agricultural colleges. Sir Thomas Elliott, then Secretary to the Board, Dr.—now Sir Edward—Thorpe, then Chief Agricultural Analyst, and Dr. W. Somerville, then an Assistant Secretary to the Board, were also present. The deputation consisted of the President of the Institute, with Sir William Ramsay, Prof. J. Millar Thomson, and Mr. Walter W. Fisher.

It had come to the notice of the Council of the Institute that the Board of Agriculture was encouraging technical and agricultural colleges, which were supported by public moneys for purely *educational* purposes, to undertake chemical analyses and tests either gratuitously or at merely nominal fees. The Board regarded the work as educational. The representatives of the Institute contended that the colleges were intended to train farmers in agricultural chemistry, and where the college had not a special staff for analytical work, the teachers' time would be taken up by such work and withdrawn from the students. Many kinds of agricultural samples—soils, manures, feeding cakes—and even drinking water, were examined at the colleges at nominal fees. Hitherto agricultural analyses had been carried out chiefly by analysts retained by the various agricultural associations, which were not State-aided. The farmers belonging to the associations had been able to have samples examined, at special fees, by competent and specially retained chemists who were well-known to the Board, and whose work on behalf of agriculturists had been properly appreciated. The position of agricultural associations was seriously affected by the transfer of the work to the colleges. The fees for which it was performed by the colleges were so low that no professional chemist could charge them, and the colleges were thus spending public moneys for the benefit of a particular class.

With regard to milk samples, the opinion was expressed that, in the vast majority of cases, the constituents of milk from well-bred and decently-tended cows was well above the standards, and, therefore, the anxiety of the Board to assist farmers in that connection was unnecessary, while it was a serious matter that an unscrupulous milk producer should be afforded facilities for ascertaining, at practically no cost, how far he could lower the quality of the milk without fear of prosecution. It was stipulated by the authorities of several colleges that certificates given in connection with this work should not be used in cases under Sale of Food and Drugs Acts or Fertilisers and Feeding Stuffs Act, but instances occurred in which such certificates were produced as evidence for the defence.* The Institute hoped that the Board might see its way to request the colleges to discontinue this work, especially in view of the discouragement to the practice of agricultural chemistry.

Mr. Fellowes promised that the matters would receive careful consideration. He was sure that the Board did not want to do anything which would injure the profession of chemistry.

* A case of this kind occurred in 1910, where the report on an analysis of a sample of milk carried out at a College was used by the defence in a prosecution under the Sale of Food and Drugs Acts, notwithstanding the regulation of the Board of Agriculture and Fisheries that such reports should not be so used, the fact that it was an official sample having been concealed.

In January, 1906, a statement appeared in *The Journal of the Board of Agriculture*, to the effect that in connection with the arrangements which had been made by the agricultural colleges for determining, on behalf of farmers, the percentage of butter-fat in milk for a fee of sixpence per sample, the Board thought it might be useful to point out that the services rendered for this small fee were by no means identical with the exact chemical analysis made by a Public Analyst. There was an essential difference between the rapid mechanical tests carried out by the agricultural colleges, for the purpose of enabling farmers to effect an improvement in the economical management of their dairies, and the important and accurate analyses required of public analysts, with the object, very often, of furnishing evidence on which to base a prosecution under the Sale of Food and Drugs Acts.

Beyond this statement, which was subsequently repeated in official documents and at an interview with representatives of the Institute, no steps appear to have been taken to remedy the complaint of the practising agricultural chemists.

As indicating the influence of the foregoing example, it may be mentioned that, shortly after, the corporation of an important city decided to ask the local university college to undertake the duties of Public Analyst. It was questionable whether such action was legal under section 13 of the Sale of Food and Drugs Acts. However, the Council, on addressing a representation to the authorities of the college, were informed that they had resolved not to give permission to any member of the staff of the college to undertake the work.

In May, 1905, the Council had under consideration correspondence which indicated that the staff of the National Physical Laboratory undertook routine tests and analyses ordinarily conducted by professional chemists in practice. The authorities of the laboratory, moreover, published a "Test Pamphlet" containing particulars of charges for such investigations. The Council of the Institute communicated with the authorities, and, on July 5th, Lord Rayleigh, as Chairman of the Executive Committee of the Laboratory, met the President of the Institute—with Dr. Edward Divers,

NATIONAL
PHYSICAL
LABORATORY.

1905.

NATIONAL
PHYSICAL
LABORATORY.

then President-elect of the Society of Chemical Industry, Mr. Edward Bevan, then President of the Society of Public Analysts, and Mr. Bertram Blount—at the rooms of the Royal Society.

Attention was directed to certain clauses of the Report of the Treasury Committee (1898) on which the Laboratory had been founded. In clause 9 it was stated that "it would neither be necessary nor desirable to compete with or interfere with the testing of materials of various kinds as now carried out in private or other laboratories." Examples of the kind of work to be undertaken were given, and the clause concluded: "We could give other instances of the same nature, and have merely referred to the above subjects as examples of such matters as would, in our opinion, be proper for investigation at a public institution, as distinguished from the ordinary testing of materials used in commerce or in construction and machinery, which can be and is now efficiently conducted at private establishments." Clause 18 further defined the work to be done as that "for which no adequate provision is at present made." The question of testing materials was outside the terms of reference to the Treasury Committee, and the mention of this work in the recommendations of the Committee was accompanied by a very careful definition. The words "testing materials" which appeared in the conclusions of the Report, could be interpreted only in conjunction with clause 9, from which it appeared that the Treasury Committee employed the term "materials" in the general sense, and not as indicating *samples* of materials. The clause indicated that the Laboratory was to be for *physical* testing, and decided that it should not be used for tests such as were efficiently conducted in private establishments. Clause 24 of the Report included the statement: "The results of the investigations undertaken at the request of private individuals should, except in special cases to be approved beforehand by the governing body, be published or be accessible to the public. . . ." It would have been absurd therefore, to suppose that there would be any necessity to provide for the publication of the results of routine tests.

To summarise the views of the Council, it was stated that routine testing of particular samples of materials did not come within the terms of clause 9 of the Report of the Treasury Committee, and should not be conducted by a public State-aided institution. The opinion was therefore expressed that it was desirable that those portions of the "Test Pamphlet" which related to tests and analyses of this description should be deleted.

Lord Rayleigh promised to lay the matter before the Executive Committee of the Laboratory, and subsequently an interview took place between the Executive Committee of the Laboratory and representatives of the Society of Chemical Industry, when it was agreed that the Committee should revise the "Test Pamphlet" containing the list of work undertaken at the Laboratory.

Later, the Council received a letter from Lord Rayleigh stating that the Executive Committee believed that the staff

of the Laboratory had not interfered with the ordinary work of professional analysts, and had no intention of conducting it so as to cause such interference. The Committee had under consideration the wording of the "Test Pamphlet," and proposed to make certain changes which they believed would do away with any ambiguities. (See p. 210.)

1905.

Almost every year, the Council were in communication with the Local Government Boards and the Board of Agriculture with reference to the conditions of public analytical appointments. The Boards, in their desire to further the detection of adulteration, advised the local authorities, at this period, to take "unofficial" or "test" samples. Such samples were in some cases not submitted to duly qualified official analysts; the local authorities occasionally submitted them to others having no special qualification for the work. The Association of Public Analysts of Scotland (which had been founded in 1901) approached the Local Government Board for Scotland on this matter in 1904, and also referred to the insecurity of tenure of public analysts' appointments.

The Council of the Institute addressed a communication to the Board strongly supporting the views of the Association. In reply to these representations, the Board stated that they had not asked local authorities for information regarding "test" samples analysed by persons other than public analysts, and that they in no way encouraged the analyses of such samples by other than analysts appointed under the Acts. With regard to the question of tenure of office, the Board expressed their sympathy with the views of the Association to the extent that they were conscious of the importance of maintaining the independence of the analyst's position; they regretted that the formation of joint committees for the execution of the Acts in Scotland had, in some instances, led to the removal of an analyst from office, and promised that when proposals for a joint committee were brought before the Board, they would endeavour to see that substantial regard was paid to the rights of the existing analysts, subject to other interests involved.

In 1905, a Special Committee was appointed to consider the recommendations attached to the Report of the Department.

PUBLIC
APPOINT-
MENTS.LEGISLA
TION.

mental Committee appointed by the Board of Agriculture to enquire into and report on the working in Great Britain of the Fertilisers and Feeding Stuffs Act, 1893. The Special Committee reported to the Council in April, and it was resolved to submit their opinions to the Board of Agriculture for consideration. With reference to the question of test samples, the Council urged that all test samples should be examined by the district agricultural analyst duly approved by the Board. With reference to the question of forwarding the invoice relating to a substance of which a sample was submitted to the district agricultural analyst, it was suggested that the name of the seller or any matter identifying the seller might be omitted, but that the analyst should be informed of the exact description of the goods and the guarantee under which they had been purchased, that he might know what was to be determined.

With reference to the proposal that the district agricultural analyst should reside in the district for which he acted, the opinion was expressed that such recommendation was neither necessary, nor, as a rule, advisable. The Council suggested that it would be desirable to formulate regulations as to the competency of analysts appointed under the Act, and that the Board should accept the qualifications of the Institute, together with evidence of experience in agricultural chemistry and analysis, as proof of competence. While the Council believed that the recognition of such qualifications would be found satisfactory, they were willing to consider the question of instituting an examination in agricultural chemistry and analysis, to be conducted on lines approved by the Board, as in the case of the special examination for candidates desirous of becoming public analysts.

With reference to a recommendation that the Board should take steps to procure uniformity of procedure in the analysis of fertilisers and feeding stuffs, the majority of the Council were unable to approve of the proposal. It was suggested, however, that in the event of inquiry being made into the question, the Council would be willing to appoint witnesses to give evidence on such matters.

In reply, a letter was received, thanking the Council for acquainting the Board with the above views, and stating that

they would receive careful consideration when fresh legislation on the subject should be undertaken. (See p. 195.)

Matters of professional interest, specially relating to public chemical appointments, were so frequently referred to the Council that it became necessary to appoint a Special Committee to consider them. The Public Appointments Committee, as it was entitled, has since been reappointed annually.

In February, 1906, the Council decided to publish "A List of Official Chemical Appointments," this work being entrusted to the Registrar. The general scheme of the publication had been already considered by the Proceedings Committee and the bulk of the necessary information collected, so that the first edition was ready in June of the same year. The object of the publication was to provide and maintain a list of official appointments held by professional chemists. It contained appointments under the various Departments of State, and professional and teaching appointments in Great Britain and Ireland, in the Empire of India, and over-seas British Dominions. The second edition was published in April, 1908, the third in January, 1910, and the fourth in February, 1912, the information being carefully revised and amplified for each issue.

At the twenty-eighth Annual General Meeting held on March 1st, 1906, Mr. David Howard delivered his third presidential address, in which he reviewed the progress of the Institute during his term of office.

TWENTY-
EIGHTH
ANNUAL
GENERAL
MEETING.

Mr. Howard alluded to the improvement in the financial position of the Institute and to the steady growth of the library. Referring to the scheme for the new examinations in chemical technology, he expressed the hope that, in future, the Institute would have for its presidents industrial chemists, as well as those eminent for educational and strictly professional work. The Institute endeavoured to represent the profession generally, and the Council regarded it as their duty to advance the interests of the profession, and, as far as they were able, to maintain it on a sound and satisfactory basis. They had therefore made representations to authorities whose actions appeared to be detrimental to the profession. With reference to the gratuitous performance of analyses at agricultural colleges, he mentioned that the Board of Agriculture had endeavoured to show that the performance of cheap milk tests had been arranged for educational purposes. At the same time, the Board had stated that these tests were not seriously to be compared with the analyses made by public analysts and district agricultural analysts. The Council, however, had to complain of more than the milk tests: the colleges were undertaking other kinds of

1906.

TWENTY-
EIGHTH
ANNUAL
GENERAL
MEETING.

analyses at nominal fees; of soils, for instance, in some cases, at half-a-crown. This was undoubtedly injurious to the profession.

He referred to the great advances in chemistry that had been due to the work of private practitioners, giving his opinion that any action which tended to interfere with their interests would be fatal to progress.

It was with reluctance that the Council had to take up an attitude which might seem in any way antagonistic to the National Physical Laboratory, but they had been obliged to direct the attention of the Executive Committee to the fact that their "Test Pamphlet" indicated that they might undertake work which they were practically forbidden to undertake under the Treasury Report on which the Laboratory was founded. The Executive Committee had recently given their assurance of their desire to avoid any cause for complaint. He was sure that the Institute would be glad to see the Laboratory placed on such a sound footing financially that the authorities would have no temptation to extend its work beyond its proper sphere.

Mr. Howard thought the profession had reached a somewhat critical stage in its history. With greater facilities for training, and, consequently, a far larger supply of chemists, it was evident that only the most efficient could hope to be very successful. He believed the demand for chemists was increasing, and that authorities and manufacturers were learning that they must have efficiency. After dealing briefly with the position of the industrial chemists and official professional chemists, he referred to the professors and teachers of chemistry. He objected to the practice, which had grown of late, of blaming the universities for the loss of certain industries. He maintained that, while chemists were improving so greatly in efficiency, it was absurd to blame the professors. Every decade did not bring a Hofmann, but there had since been many teachers under whom the bulk of Fellows and Associates were proud to say they had been trained.

The Institute afforded a great benefit to the public by aiding its discrimination in the selection of competent chemists of acknowledged ability and professional integrity; the Fellows and Associates could be relied on to further the reputation of the Institute by their character and conduct, the soundness of their work, and by the cultivation of professional feeling.

On retiring from the office of President, Mr. David Howard expressed his appreciation of the honour of the position and the pleasure he had taken in the work of the Institute. He felt the fullest confidence in surrendering his trust to Prof. Percy Faraday Frankland, the son of the first President.



[Elliott & Fry, Ltd.]

PERCY FARADAY FRANKLAND, LL.D., PH.D., F.R.S.

President : 1906—1909.

PERCY FARADAY FRANKLAND : PRESIDENT, 1906—1909.

At the time of his election as President, Prof. Frankland was Professor of Chemistry in the University of Birmingham—which position he still holds. He had served on the Council from 1888 to 1891 and from 1900 to 1903, and as a Vice-President from 1903 to 1906. He had also been an Examiner from 1896 to 1900, whilst at his instigation the Council had established the Examination in Biological Chemistry, for which he had provided funds for the special apparatus required. Under his direction, the Council devoted considerable attention to educational matters.

In March, 1906, a new Fertilisers and Feeding Stuffs Bill was presented to Parliament by Sir Edward Strachey, supported by the Solicitor-General. The Council decided, therefore, to ask the President of the Board of Agriculture and Fisheries to receive a deputation from the Institute to lay before him certain suggestions with reference to the proposed legislation.

The President of the Board, Earl Carrington, received the President of the Institute, with Mr. Edward Bevan, Mr. Bertram Blount, Col. Charles E. Cassal, Sir William Ramsay, Mr. A. Gordon Salamon, Hon. Treasurer, Mr. J. E. Stead, Prof. J. Millar Thomson, and Mr. E. W. Voelcker, at Whitehall Place, on May 10th. Sir Thomas H. Elliott, Secretary to the Board, Mr. James William Clark, Legal Adviser to the Board, and Mr.—now Sir—Richard Winfrey, were also present.

Prof. Frankland mentioned that, with very few exceptions, the district agricultural analysts appointed under the Fertilisers and Feeding Stuffs Act, 1893, were Fellows of the Institute. He explained the aims and duties of the Institute, and showed that the importance of the profession of chemistry in matters relating to agriculture had been recognised in the Royal Charter. In view of the responsibility placed on the agricultural analysts and of the desirability that these officials should be thoroughly qualified, he suggested that the Board should formulate regulations as to the competency of such analysts, and that the qualifications of the Institute should be formally recognised as affording evidence of fitness. Similar recognition had already been accorded to the Institute by the Local Government Boards in the

1906.
—
LEGISLA-
TION.

official " Regulations as to Competency " of Public Analysts under the Sale of Food and Drugs Acts. The Admiralty, the War Office, the London County Council, and other important departments and public authorities had also officially recognised the qualifications of the Institute in connection with chemical appointments under their control. The matters dealt with in the Bill had been considered by a Special Committee of the Institute, and, in July, 1905, the views of the Council on the working of the Act of 1893 had been communicated to the Board, who had promised that these views would be considered when fresh legislation should be undertaken. It appeared to the Council that several suggestions had been overlooked. Prof. Frankland dealt with the matters wherein the Bill appeared to be deficient. Some sections were so unsatisfactory that a number of official agricultural analysts had openly declared that they would resign immediately from their appointments if the Bill as it then stood became law.

Attention was directed to what appeared to have been an oversight, yet was of such significance that, unless some amendment were introduced, the measure, if passed, would be practically inoperative. Under the Act of 1893, the analyst was supplied with the invoice relating to the sale of the substance submitted to him for examination, so that he might know in what respect the substance had been guaranteed. In the Bill no provision was made for this, except in the case of a sample submitted to the Chief Agricultural Analyst. It had been suggested that agricultural analysts might be prejudiced in favour of clients who were traders in fertilisers and feeding stuffs. This suggestion was unjust. There was no necessity for the analyst to know the name of the seller; it might be omitted; but it was essential that the analyst should be informed as to the guarantee under which the substance had been sold, so that he might know what was to be determined: and he should certainly be informed if it were necessary for him to ascertain whether a feeding stuff was alleged to contain any deleterious ingredient. It was not intended that the analyst should be merely a tester; he should be a responsible officer, on whose opinion subsequent proceedings might depend, and whose opinion was necessary in order to ascertain whether the substance had been sold to the prejudice of the purchaser.

With reference to a proposal that the Board should make regulations as to the manner in which analyses were to be made, the Council of the Institute offered to appoint witnesses to give evidence on such matters.

Sir Thomas Elliott said that the Board would not make such regulations without consulting the principal agricultural chemists, and he was glad that the Council of the Institute would be willing to help.

Finally, Prof. Frankland reminded the Board of the views submitted to them by the Institute on the utilisation of public funds intended for educational purposes for the provision of cheap analyses. An extension of this principle had been indicated in the Bill, wherein it was proposed to empower local authorities to contribute to the expenses of agricultural associations having analytical work as an object.

Sir William Ramsay referred to the high estimation in which the Institute was held. The Bill did not directly affect professors of chemistry, but the presence of Prof. Frankland, Prof. Thomson, and himself would indicate that they were in sympathy with the objects of the Institute, and with the views the Council had adopted in professional matters of this kind. Referring to colleges and institutions undertaking analyses, he considered the effect of the practice would be disastrous to the progress of agricultural science, as students were robbed of the prospect of practising subsequently in that branch of work. He also supported the contention that the agricultural analyst should

be supplied with information as to the determinations to be made on the samples submitted under the Act, suggesting the possibility of serious results occurring in the case of poisoned feeding stuffs, should such information not be supplied.

Mr. E. W. Voelcker pointed out that the Board had made known the fact that analyses were conducted at the colleges. In a recent number of the *Journal* of the Board, the statement had appeared that the boys at a grammar school undertook analyses for cheesemakers at 1s. per sample, and at 6d. if a number of samples were submitted. He gave instances, which had come under the notice of Dr. Voelcker and himself, showing the necessity of proper information being given to the analyst. In one case, the presence of strychnine in an otherwise pure barley meal would not have been detected but for the fact that the meal had been casually tasted. Clients had even taken it for granted that, because substances had been analysed, they had been examined for anthrax, tubercle, and other bacilli; and were apparently much surprised to learn that these investigations had not been conducted in conjunction with the analysis, although no request had been made for them.

Other members of the deputation endorsed the views expressed.

Sir Thomas Elliott said the Bill had been drafted on the recommendations of the Report of the Departmental Committee, which was based on the opinions of witnesses who had given evidence before them. He was sorry to say that certain witnesses had expressed distrust of the analysts, and had even alleged that analyses had been performed in a perfunctory manner. The Board did not share this distrust or the views expressed, and did not want to legislate on what they believed to be unfounded prejudice.

Lord Carrington thanked the President of the Institute and the deputation for their views. He enumerated the points raised and endorsed the statements of Sir Thomas Elliott. There was much to be said for the justice of the views which had been expressed on all of the points raised, and he promised that they would be considered.

Shortly afterwards, a communication was received from the Board of Agriculture stating that "in considering the question of whether appointments made by local authorities to the position of District Agricultural Analyst under the Fertilisers and Feeding Stuffs Act, 1893, should be approved, it has been the practice of the Board to have full regard to the fact that the analyst appointed is either a Fellow or Associate of the Institute of Chemistry, and, although of course the Board cannot bind themselves to refuse to approve the appointment of an analyst not possessing these qualifications, the Board will certainly continue their existing practice in the matter."

At the time of the deputation, the Bill had passed the second reading in the House of Commons and was under the consideration of the Standing Committee on Law. The deputation

1906.

LEGISLA-
TION.

1906.

reported to the Council at a meeting held on May 25th, when it was decided to ask some members of the Standing Committee on Law to introduce amendments on the points referred to above. This was done, and when the Bill was sent to the House of Lords, practically all the amendments suggested by the deputation had been adopted. Further improvements on lines indicated by the deputation were introduced in the Upper House, and the new Act, which is known as the Fertilisers and Feeding Stuffs Act, 1906 (6 Edw. VII. c. 27), came into operation on January 1st, 1907.

OFFICIAL
METHODS OF
ANALYSIS.

In the following year, the Board of Agriculture and Fisheries appointed a Committee consisting of Mr. E. J. Bevan, Dr. John Clark, Dr. Bernard Dyer, Mr. A. D. Hall, Prof. Edward Kinch and Dr. J. A. Voelcker, for the purpose of making regulations as to the methods of analysis to be adopted in connection with samples taken under the Fertilisers and Feeding Stuffs Acts. These regulations were subsequently published as the official regulations of the Board.

REGULA-
TIONS.

In the revision of the Regulations, in 1906, several important alterations were introduced. Two subjects—Higher Physics and Agriculture—were added to the list of optional subjects to be taken by candidates for the Associateship; and the Syllabus of the Final Examination in Metallurgical Chemistry was amplified, under the advice of a Special Committee consisting of the President, with Messrs. Bertram Blount, A. C. Claudet, William Gowland, Walter Macfarlane, J. E. Stead, Thomas Turner, and the Examiners.

At a special meeting, held on October 19th, the Council considered the question as to the subjects which should be taken in the Preliminary Examination, and the list was so revised that Latin, which had hitherto been compulsory, was then made optional. The study of classics being more and more discouraged in schools, the inclusion of Latin as a compulsory subject in the Preliminary Examination was found to be often a hardship. The use of Latin as an introduction to the study of modern languages was not so fully upheld as formerly, and the time which had been devoted to classics was now more frequently devoted to more directly "useful" subjects. The advocates of a classical education held that recruits from the "modern side" were often lacking in a comprehensive know-

ledge of English, whilst their vocabularies were so limited that they not only failed to express themselves clearly and definitely, but experienced difficulty in grasping the meaning of unfamiliar terms, which were more easily understood by those possessing a fundamental knowledge of Latin and Greek.

On the other hand, many held that modern languages afforded equally good mental training, and that methods of construction could be as easily cultivated by the study of modern authors. On this question there had been much deliberation. The professors of chemistry in recognised institutions were consulted, and the majority were in favour of Latin being made optional, or alternative with a modern language; but the practising and industrial chemists on the Council appeared to favour its retention as a compulsory subject. Most were reluctant to make the change, but it became imperative owing to the example set by universities in respect of science and engineering students. It was admitted that modern languages were indispensable to the chemist, for the reason that he could not afford to rely entirely on the second-hand information given in English abstracts, but had to translate from the original languages. It was desirable, therefore, that chemists should be encouraged to pursue the study of modern languages.

In the place of Latin, the Council decided to require either Higher Mathematics or a second approved modern language. There was some difficulty, however, in defining Higher Mathematics, as it was found that the standard varied considerably with the different examining bodies whose certificates were accepted. Ultimately, the Syllabus of the Preliminary Examination was amended so that candidates who did not take more than one modern language were required to pass in either Higher Mathematics, as defined by the respective examining bodies, or in some other subject prescribed in the regulations for a preliminary examination approved by the Council; and, in order to promote the study of languages, the Council resolved, in the following year, that after January 1st, 1910, all candidates for the Final Examination should be required to translate passages from both French and German chemical literature, to the satisfaction of the Examiners—the use of dictionaries being allowed.

1906.
REGULA-
TIONS.

The Council also gave notice that after January 1st, 1909, a course of instruction in Elementary Botany would be compulsory for candidates taking Branch (e), The Chemistry of Food and Drugs, etc., of the Final Examination, and a course in Elementary Biology would be compulsory for candidates taking Branch (f), Biological Chemistry, of the Final Examination. The courses in such cases, might however, be taken either before or after passing the Intermediate Examination. The course in Elementary Botany should include instruction which would enable the candidates taking Branch (e) of the Final Examination to produce evidence of systematic practice in Microscopy, which was also made compulsory.

CHEMICAL
TECH-
NOLOGY.

The first examinations in Chemical Technology were held from October 16th to 18th, 1906. Each candidate was required to select one important industry by which his knowledge of the subjects of the examination might be tested. Three candidates presented themselves, selecting, respectively, Gas Manufacture, the Oils and Fats Industry, and Steel Manufacture. Only the candidate who selected Gas manufacture satisfied the Board. The Council acknowledged their indebtedness to the special Examiners, and to companies and firms who had supplied plans of plant and machinery for use in these examinations. The Council also accorded their thanks to Mr. Oscar Guttman, to whom the formation of the collection of plans had been entrusted.

TWENTY-
NINTH
ANNUAL
GENERAL
MEETING.

At the twenty-ninth Annual General Meeting, held on March 1st, 1907, Prof. Frankland, in thanking the Fellows and Associates for electing him to the office of President, said he valued the distinction, not only for the confidence and goodwill of his colleagues which it implied, but also because it placed him in the Chair occupied by his father, the first President of the Institute. His election, he said, appeared to mark, in the history of the Institute, the passage from the first to the second generation; while his predecessors in the Chair were all founders of the Institute, he had been required to gain admission by examination.

The most important feature of the year's work had been the inauguration of examinations in Chemical Technology. The first examination had dissipated any doubts which some had entertained as to the value

of these examinations. The Council believed that they would materially help Fellows and Associates to obtain employment in chemical industries.

After referring to a number of changes made in the Regulations for admission to the Institute, particularly the deletion of Latin from the list of compulsory subjects in the Preliminary Examination, Prof. Frankland announced the appointment of the new Board of Examiners for the conduct of the Associateship Examinations.

He explained that for a number of years both the Intermediate and Final Examinations had been conducted by two Examiners, but, as the scope of the Final Examinations was extended, it became evident that the whole field could not be covered by two chemists alone, however accomplished they might be, and however perfectly they supplemented each other. It had been found necessary, in the first instance, to call in the assistance of a third Examiner—an authority on therapeutics and pharmacology—and then a fourth—to conduct the examinations in biological chemistry. With four Examiners, however, it was still found impossible to carry out the scheme prescribed by the Council, for so rapid was the growth of chemical science that its details could not be satisfactorily mastered without the aid of assistants possessing special attainments in physical chemistry and in metallurgy, respectively. Under these circumstances, it appeared that the time had come for restricting the work of each Examiner, and by appointing more Examiners in special branches, to create a Board which would be capable of carrying out the scheme with increased efficiency. The new organisation provided for: (1) The Intermediate Examination being conducted by two Examiners in Chemistry; and (2) The Final Examinations being conducted by special Examiners in Mineral Chemistry, in Metallurgical Chemistry, in Physical Chemistry, in Organic Chemistry, in the Chemistry of Food and Drugs and of Water, in Biological Chemistry, and in Therapeutics, Pharmacology and Microscopy.

The Council felt that a Board thus constituted should make for efficiency, and that it would be difficult to find anywhere a more powerful machine for conducting examinations in chemistry.

The funds of the Library of the Institute had undergone a marked improvement, chiefly due to generous contributions received from Mr. D. A. Sutherland, Mr. A. C. Claudet, and Sir Thomas Stevenson; and the Committee had been able to add greatly to the utility of the Library by binding a large accumulation of journals. The Council had no intention of duplicating the Library of the Chemical Society. The Library of the Institute was essentially a working library for students, Associates and Fellows. The multiplication of working, as distinguished from exhaustive libraries was in the highest degree desirable. An exhaustive library was, excepting to frequent visitors, like the proverbial wood which could not be seen because of the trees, whilst a more restricted and practical library, in which the commoner journals and books could be consulted more readily and under more informal conditions, was a great boon to many.

It was an important function of the Institute to safeguard the interests of professional chemists, and the Council had devoted much time to work of this kind. If all young chemists were aware of the amount of time and trouble spent by the Council in endeavouring to secure better conditions for professional chemists generally, many more would support the Institute and its work.

Prof. Frankland concluded his Address by commenting on the special value of the Institute. He showed how the examinations of the

1907.

PROF.
FRANK-
LAND'S
ADDRESS.

Institute differed from those of the universities. Whilst the latter were contrived to test the amount of knowledge which a candidate had succeeded in bringing to a focus at a particular moment of time, the main object of the examinations of the Institute was to test what the candidate could actually perform when he was placed as nearly as possible under the same conditions as he would be in practice and within reach of a good chemical library. The candidate who did well in the one would not necessarily do so well in the other. It was a common experience for teachers to meet with students of excellent mental ability who readily acquired knowledge of theoretical chemistry, even in its more advanced and modern branches, who talked glibly about the phase rule, and perhaps could cite correctly author and year for the discovery of reactions in obscure chapters of organic chemistry, yet, when it came to the production of experimental results, were hopelessly outclassed by students of more modest theoretical attainments; and whilst the latter met with remarkable success in their practical work, everything failed in the hands of those who moved with such facility in the theoretical part of the subject. The paper man might take an Honours Degree, but, should he present himself at the Institute, he might ignominiously come to grief, because he did not possess even the rudiments of that instinct which was necessary to the performance of practical chemical work, in spite of the application of higher mathematics to the interpretation of chemical phenomena. Before all things, the Institute's qualification was of a practical nature. The university graduate was more qualified to talk and to teach, but the overcrowding of his curriculum left him little time in which to practice and acquire technical skill, without which the Institute's qualification could not be attained. It was this practical character which was to be preserved in the Institute's examinations, so that the Fellows and Associates might be known for soundness of judgment and for capacity to perform chemical work upon which the public could place implicit reliance. As new branches of chemistry arose, the Institute should be ready to extend the scope of its examinations, and in each branch to secure the highest standard of competency.

BOARD OF
EXAMINERS.

The appointment of the Board of Examiners, to which Prof. Frankland referred in his Address, was one of the most important steps taken for the maintenance of the standard of the examinations. Originally the examinations were conducted by selected Examiners acting independently and reporting to a Committee, by whom the results were assessed. Later, in 1889, to secure uniformity, a Board was appointed to control the examinations which, as the Institute did not then possess a laboratory, were held at several centres. In 1892, examinations were held in London only, by two Examiners—a teacher and a professional chemist in practice. In 1893, the Regulations were thoroughly revised, introducing the Intermediate and Final Examinations, but they did not come into full operation for several years, and, as indicated in the Address, the examinations continued to be conducted by two Examiners who were, in the course of time,

empowered to call in special assistants in various branches of work. In 1907, however, the control was placed in the hands of the new Board, acting under the chairmanship of the President, and consisting of two Examiners for the Intermediate Examination and for general knowledge in Chemistry, selected as before (*i.e.* a professor and a professional chemist), and seven other members having special knowledge in the different branches of the Final Examination. This system is in force at the present time.

By a Minute, dated March 23rd, 1907, the President of the Board of Agriculture appointed a Departmental Committee to inquire as to the provision which had been made for affording scientific and technical instruction in agriculture in England and Wales, and to report whether, in view of the practical results which had already been obtained, the existing facilities for the purpose were satisfactory and sufficient, and if not, in what manner they might with advantage be modified or extended. The Committee consisted of: Lord Reay (Chairman), Lord Barnard, Lord Moreton, Mr. Francis Dyke Acland, Mr. David Davies, Mr. Norman Lamont, Mr. Thomas Latham, Mr. John Charles Medd, Prof. Thomas Hudson Middleton, Prof. William Somerville, and Mr. Henry Staveley-Hill.

1907.
—
AGRICUL-
TURAL
EDUCATION.

The Council of the Institute regarded the appointment of this Committee as affording a suitable opportunity for again directing attention to the practice of utilising agricultural colleges for the purpose of providing analyses and tests for landowners, farmers and others, gratuitously, or at merely nominal fees. The Council, therefore, forwarded to the Committee a statement of their views on this matter. They showed that the custom had much increased since the introduction, at the suggestion of the Board of Agriculture, of the practice of making at the colleges tests of milk by the Gerber process. They referred to the interview between the President of the Board and representatives of the Institute, in April, 1905 (see p. 185), and recapitulated the views then submitted, urging the Departmental Committee to recommend the Board to do all in their power to stop the practice before further injury was done to a profession to which agriculture was deeply indebted.

1907.

AGRICUL-
TURAL
EDUCATION.

The report of the Committee, which was published towards the end of July, 1908, included the following section :—

Analytical Work at Teaching Institutions.

101. In connection with experimental work, the chemists at teaching institutions must frequently make analyses of manures and feeding stuffs. In some cases those responsible for this work have gone further and made analyses of manures and feeding stuffs for farmers at a cheap rate. These analyses have been undertaken in order to induce farmers to pay more attention to the character of the materials which they buy for fertilising the soil or for stock feeding, and the object of the institutions has primarily been educational. The educational value of this work in some districts is undoubted, and evidence was given of the appreciation shown by farmers of such assistance. On the other hand, it was argued by Dr. J. A. Voelcker in his evidence, and also in a communication received by the Committee from the Institute of Chemistry, that college teachers, by performing these analyses, were undertaking commercial work, and that colleges should not use money granted for educational purposes for work of this character.

The Committee, while of opinion that analysis for commercial or trade purposes forms no part of the function of an agricultural college in receipt of State aid, consider that when analytical work is distinctly of educational value it may properly be carried out by the chemist at such an institution.

The Minutes of Evidence taken before the Departmental Committee, which had also been published, contained the evidence of Dr. J. A. Voelcker, who represented the views of the Council on this matter.

It was evident that the Committee intended to convey the opinion that no agricultural college in receipt of State aid should conduct an analytical and consulting practice. The Council of the Institute, therefore, welcomed an authoritative statement which recognised the need for protecting the rights and privileges of the profession.

The question of the security of tenure of office of public analysts and other matters concerning the administration of the Sale of Food and Drugs Acts being frequently under the consideration of the Council, it was decided to formulate a statement to be submitted to the President of the Local Government Board, at the same time expressing the willingness of the Council to send a deputation to meet the officers of the Board to discuss the points which had been raised.

Before approaching the Board, the Council consulted eminent counsel having special experience in local government matters, and found that his opinion confirmed the view held by the Council, that the discretion conferred on the Board

PUBLIC
APPOINT-
MENTS.

in respect of the appointment or removal of public analysts under the Acts was practically unqualified, and that, as under section 10 of the Act of 1875, the Local Government Board might grant approval "with modifications as to the period of the appointment or removal or otherwise," their powers of control, not merely of the appointment but of its conditions, were extremely wide. This opinion was forwarded to the Board, and, at the same time, the Council, after directing the attention of the Board to the desirability of making the conditions of appointment of public analysts attractive to candidates with the highest qualifications, urged that the tenure of office of such appointments should be made more secure. The Council indicated a number of ways whereby tenure might be endangered, instances which had actually occurred being given, and asked that the Board should endeavour to prevent such occurrences. The Council suggested that, in the event of further legislation, the Board should take even wider powers: (a) to control the terms and conditions of appointment of public analysts; (b) to safeguard the interests of existing officers in the event of changes in the administration of the Acts; (c) to take steps to ensure that the conditions of appointment and remuneration should be such as would attract competent and experienced men; and (d) to give public analysts the right of appeal to the Board on matters relating to their office.

The Board informed the Council that they had taken note of the points mentioned and that these would receive consideration.

Later, in 1907, the Association of Public Analysts of Scotland reported that one of their members had been removed, without adequate reason being given, from an appointment as agricultural analyst under the Fertilisers and Feeding Stuffs Act. The Council of the Institute addressed a letter to the Board of Agriculture suggesting that it would be desirable to frame a regulation subjecting to the approval of the Board not only the appointment, but also the removal of agricultural analysts. The reply received was to the effect that the matter was one with respect to which the Board would not be justified in laying down any ruling, but that they would consider representations made

1907.

STILLS.

to them with regard to hardship arising in any particular case, and would communicate with the local authority, if they could with propriety and advantage intervene (see p. 214).

A number of professional chemists having been served with a notice to the effect that they were forbidden to recover or purify methylated spirit, the Council addressed a letter on the subject to the Board of Inland Revenue. In March, 1907, a reply was received from the Board stating that, while they reserved to themselves the right to insist in every case, in which it should appear to them to be necessary to do so in the interests of the Revenue, on a strict observance of the regulations—under 43 & 44 Vict. c. 24, 53 Vict. c. 8, and 6 Edw. VII. c. 20—in regard to the use of methylated spirit, they did not propose to exercise this right in such a way as to interfere unduly with the ordinary practice of an analytical and consulting chemist. The Board requested, however, that the official form of application should be filled up in every case.

Shortly after, an officer of the Board of Inland Revenue informed a Fellow of the Institute that the use of a still of more than one gallon capacity for distilling water would not be allowed without a licence being taken for it. The Council communicated with the Chairman of the Board, drawing attention to the fact that, after representations had been made by the Institute in 1892, the right to apply for exemption from taking licences was granted to professors and teachers of chemistry and analytical chemists, using stills solely for the purpose of distilling water, without any restriction as to the capacity of the stills. It would seem unnecessary to impose a limitation, seeing that such restriction would be tantamount to removing the privilege which had already been granted. The Council, therefore, asked the Board to reconsider the matter.

The Board stated, in reply, that they had no desire to recede from the position taken up by them in 1892. A comprehensive statement on the general subject of licences for stills was published in *Proceedings*, Part I., 1908.

PROFES-
SIONAL
INTERESTS.

With the increasing demand for the services of consulting and analytical chemists in government employ, the Council

of the Institute found frequent cause to address representations in cases where there was evidence of lack of information on the part of appointing authorities with regard to the qualifications of candidates for professional chemical appointments.

1907.

In May, 1907, it came to the knowledge of the Council that INDIA. in certain appointments under the Government of India, the status of professional chemists was not properly recognised. The Council, therefore, deemed it desirable to advise Fellows or Associates seeking appointments in India to make sure that they were gazetted as officers, and recognised as such in the regulations of the departments under which they were seeking appointment, so that they might not find themselves in a position inferior to that to which they had a right, both officially and socially. The Council addressed a communication to the Secretary of State for India on these matters, and representations were repeated from time to time, until 1913, when a formal memorandum was forwarded to the Royal Commission on the Public Services in India, to which reference will be made in due order (see p. 233).

In October, the attention of the Council was directed NATAL. to an answer which had been given, in July, by the Minister of Agriculture in the Legislative Assembly of Natal, referring to the appointment of public analysts in the Colony. The Minister had stated that a Diploma in Public Health was evidence that the holder was competent to carry out all analyses. The Council thereupon addressed a letter to the authorities urging them to adopt a standard as high as that required in Great Britain and Ireland for such appointments, and pointing out the significance of the Fellowship and Associateship of the Institute, as compared with that of the Diploma in Public Health. The Colonial Secretary acknowledged the letter and stated that the opinion of the Council had been noted.

While, however, such instances indicated a lack of appreciation of the nature of professional chemical services, signs were not wanting that other authorities were more enlightened. Thus, in the same year, the attention of the Council was directed to the example set by the County Council of East Suffolk, who empowered the County Coroner to order an

ANALYSES IN
CASES OF
SUSPECTED
POISONING.

1907.
 ANALYSES IN
 CASES OF
 SUSPECTED
 POISONING.

analysis by a properly qualified analyst in any case of suspected poisoning, not being one of alleged foul play, in which latter case the official analysts of the Home Office would conduct the necessary examination. Formerly, all analyses in such cases were undertaken by the Home Office, but the conduct of this work was limited to instances of alleged foul play, and it had been customary for police surgeons to carry out some sort of chemical examination as an adjunct to the *post-mortem* examinations. Medical practitioners who were capable of undertaking chemical investigations of an intricate character were exceedingly rare, and the example set by the East Suffolk County Council was therefore of interest.

DINNER.

A public dinner was held at the Whitehall Rooms, on November 22nd, to celebrate the thirtieth anniversary of the foundation of the Institute.

The President, in replying to the toast of the Institute, proposed by Lord Robert Cecil, said that although a generation of men had passed away since the foundation of the Institute, many of the original Fellows were still alive, and not a few of them were present on that occasion. He had the distinction of being the first President who had gained access to the Institute through "the iron gate of examination." The professional organisation of chemists was rendered necessary when the application of chemical science to the concerns of practical life became a matter of common occurrence. Such organisations were demanded in the interest of the public seeking expert advice, and also in the interests of the experts themselves; the public required guidance in the selection of an expert, and a reasonable assurance that the person in whom they reposed their confidence was not only duly qualified, but also likely to behave in an upright and honourable manner, or, in other words, that he was guided in his doings by a code of ethics which was above suspicion. In the interests of the expert, again, such an organisation was required in order that the expert might have some guarantee that the colleagues with whom he was associated in his work would not, by any glaring deficiency in attainments or in conduct, bring discredit on the profession as a whole and so indirectly on himself. With such professional organisations the civilised world had been familiar from very high antiquity, in the shape of the Church, or some equivalent ecclesiastical institution, the Law and Medicine. The chemists of thirty years ago desired to found an altogether new profession for the exercise in the public service of those new powers which the extraordinary development of chemical science had conferred. In this laudable and reasonable endeavour they were met by a very large amount of opposition from the most unexpected quarters; but the leaders who guided the destinies of the Institute at its inception were not the men to be easily baffled by opposition, and in eight years from the time of its foundation they succeeded in obtaining the Royal Charter. For this memorable achievement the whole profession of chemistry owed a deep and permanent debt of gratitude to the then President, Prof. Odling.

A great deal had recently been said about "recognition" of a certain

organisation of men, and although the Institute was not a trades union, it also had its difficulties in this matter of recognition. It owed a debt of gratitude to his predecessors in office for the large measure of success which had attended their efforts in securing adequate recognition for the Institute; and the public also should be grateful for the patient and pacific means which had been, and were still, employed in securing such recognition. His predecessors in office had secured recognition of the Institute by numerous departments of the Government, and by a great many public bodies of high importance. To take only a few examples, the Local Government Board, the India Office, the Board of Inland Revenue, the Home Office, the Admiralty, the Board of Agriculture, all knew the Institute, and they knew the value of its qualification. The Parliamentary Committees at Westminster and the High Courts of Justice listened to the evidence of the Fellows, and they must have found that the Fellow of the Institute of Chemistry was rarely, if ever, an "expert witness" in the sinister sense which had come to be associated with that collocation of words! Again, that great unpaid body of administrators of the law, the magistrates, were by no means ignorant of the Institute of Chemistry and of many of its Fellows. This wide recognition which had been achieved for the Institute was due to the policy, which had been unswervingly pursued by the Council, of demanding a very high standard of qualification for admission to the Institute. The Council, had, throughout, aimed at the Institute examinations in practical chemistry being of a more thorough and searching character than the examinations conducted in connection with any University or other qualification. The Council had further pursued the progressive policy of demanding that every great advance in chemical science should be duly reflected in the scope of the examinations of the Institute. But this recognition had not only been obtained by demanding a high standard of qualification, but equally by the high standard of conduct which was generally maintained amongst the Fellows and Associates. Far from the profession of chemistry being played out, it was even now only in its infancy, and every year saw new applications of chemical science in the service of mankind, and therewith the opening out of new fields of activity for the professional chemist. The civilised world was becoming less and less able to dispense with their services, and was constrained to seek their advice and co-operation in an ever-increasing number of connections. Not only was the work on control by analysis growing daily in volume, but there was a special increase in the number and variety of practical problems which the chemist was asked to solve by means of research. Analysis of a more or less routine character, which at one time formed the bulk of the practice of chemistry, was now a relatively subsidiary part of the work of the professional chemist, who was more and more engaged in investigations demanding originality and resource, often of a very high order. If the Fellows and Associates would retain and extend the public confidence which they enjoyed, they must remain true to the spirit which had animated his predecessors in office; they must ever keep their eye on the progress of chemical science, on its actual applications to-day, and on its possible applications in the near future; they must demand such credentials, in the shape of training and examinational tests, from those seeking admission to their body, that the qualification which they conferred should ensure, as far as possible, that the Fellows and Associates, in respect of training, in respect of judgment, and last but not least, in respect of conduct, should be professional chemists whom the world could implicitly trust not only to-day but also to-morrow.

1907.
UNIVERSITY
OF LEIPZIG.

In 1907, the Faculty of Philosophy of the University of Leipzig decided, in the case of an Associate of the Institute, to recognise his qualification as such in the same way as the degrees of B.A. and B.Sc. were recognised when held by British students who wished to take the Degree of Ph.D. of the University. This decision was subsequently confirmed by formal regulation (see p. 270).

SOCIETY OF
CHEMICAL
INDUSTRY.

In the same year, the Society of Chemical Industry presented a petition to the Crown to be incorporated under and subject to a Royal Charter. The subjoined clause, with the approval of the Councils of both Societies, acting on the opinion of their legal advisers, was inserted in the proposed Charter in that portion which defined the objects of the Society:—

“But such objects shall not comprise nor shall this our Charter confer upon the Society any power or right to act as an examining body for the purpose of prescribing or holding examinations whereby degrees, qualifications, or authorities to practise or to use any distinctive title can or may be conferred upon practising, consulting, analytical or technical chemists or any other persons whatsoever whether or not members of the Society.”

LIBRARY.

About this time, the Library was augmented by the addition of over sixty volumes, including a number of useful books received from Sir Thomas Stevenson, and a bound set of the first twelve volumes of the *Journal of the Society of Chemical Industry* from Mr. Thomas Tyrer.

NATIONAL
PHYSICAL
LABORATORY.

In 1906, the Council were informed by Mr. Reginald McKenna, Financial Secretary to the Treasury, that the questions which had been raised by the Institute with regard to the functions of the National Physical Laboratory had been under the consideration of the Treasury and the Council of the Royal Society. The Lords of the Treasury had suggested to the Royal Society “that it would be desirable to define more precisely the kind of work which the Laboratory should be authorised to undertake, so as to avoid as far as possible undue interference with the business of other agencies.”

At the Annual General Meeting of the Royal Society, held on November 30th, 1906, it was announced that the Treasury had decided to appoint a Committee “to inquire into the working of the Laboratory with a special reference to this question.” The Council of the Institute addressed

a letter to Mr. Walter Runciman, the Financial Secretary to the Treasury, urging that the terms of reference should not be narrowed, and that the Committee should include men possessing a special knowledge of the complex technical and scientific issues involved. After its appointment, the constitution of the Committee was criticised because it included two members of the Executive Committee of the National Physical Laboratory who had openly opposed the views expressed by the Council of the Institute. The Council addressed a further letter to Mr. Runciman, expressing the hope that the Committee might be extended to include representatives of the consulting professions affected. Mr. Runciman, however, was not prepared to recommend any alteration in its composition. A number of the Fellows of the Institute were invited to give evidence, and among those who were heard before the Committee in July, 1907, were Prof. Frankland (President), Mr. David Howard and Sir William Ramsay (Vice-Presidents), Mr. Bertram Blount, and Mr. J. E. Stead.

The Report of the Committee with a Treasury Minute, dated February 1st, 1908, recording approval of the recommendations contained in the report of the majority of the Committee, was published as a Parliamentary Paper on 28th February, 1908. The Minutes of Evidence, with Appendices and Index, which were also published, included the evidence given by the representatives of the Institute. The correspondence between the Institute and the National Physical Laboratory (1904-1906), and letters addressed by the Institute to the Treasury, were printed in the Appendices.

An abstract of the Report was reproduced in *Proceedings*, Part II., 1908.

The Committee were of opinion that the work proper for a National Physical Laboratory to undertake was correctly laid down, so far as the main lines were concerned, by the Committee of 1898; and that this work should include not only physical research directly or indirectly bearing on industrial problems, and the standardisation and verification of instruments, but also—under proper restrictions—the testing of materials.

A considerable amount of evidence had been taken, and a marked divergence of opinion disclosed on two subsidiary points to which the Committee's attention was specially directed by the Treasury Minute, namely, (1) the possibility that the mechanical, physical, and chemical tests actually undertaken by the laboratory might

1907.
 NATIONAL
 PHYSICAL
 LABORATORY.

interfere unduly with private enterprise ; and (2) the desirability of publishing the results of all such testing work. The evidence showed that private testing establishments, and also professional analysts who were in the habit of adding engineering tests to chemical analyses, were beginning to look on the policy they attributed to the laboratory as a serious menace to their interests. The Committee were disposed to regard these fears as exaggerated, but they could not regard them as unreasonable or wholly without foundation. The Committee distinguished "commercial" testing into "contractual" and "investigatory" testing : "contractual" testing being the ordinary testing of materials to ascertain whether their quality and behaviour were in accordance with the requirements of contracts ; "investigatory" testing, the investigation for commercial purposes of various substances in which no question of contract arose. They were of opinion that the laboratory should remain absolutely free with regard to "investigatory testing," and that the case of those representing private testing establishments would be substantially met, if, as a general rule, the laboratory were debarred from undertaking "contractual testing" as above defined. The Committee recommended this restriction, subject to the following exceptions : "There are some tests, chiefly electrical, thermal, optical, and other physical tests, which cannot be carried out adequately, if at all, in any existing private establishment. In such cases, it would obviously be absurd to debar the laboratory from undertaking the work merely on the ground that the tests are intended to ascertain whether certain materials comply with the requirements of a contract. In the second place, no restriction should apply to 'reference' testing wherever, in cases of dispute, the parties concerned agree to refer their differences to the authoritative decision of the laboratory, or where the laboratory is called in by a court of law or of arbitration. Lastly, in view of the character of the laboratory as a public institution, we think it ought to be free to accept any work which any Government Department may desire to commit to it. In this category we include the work until lately carried out at Cooper's Hill on behalf of the Indian Government. Reference testing, for the settlement of disputes, would not, in our opinion, involve any undue interference with the work of outside agencies ; while, as to Government work, it is improbable that much of this would, in any circumstances, find its way to private testing establishments. As an additional safeguard against injurious competition with private enterprise, we think, wherever the same tests of materials are carried out both by the laboratory and by outside agencies, care should be taken that the fees charged by the former should be at least as high as those normally current. In the case of reference testing, we think they should be distinctly higher"

The Committee were of opinion that the Executive Committee of the laboratory should hold themselves somewhat freer than heretofore to exercise a discretion as to the withholding of results from publication, either wholly or in part, for a limited number of years, but they also thought that in cases where publication was thus deferred, a considerably higher fee should be charged to the persons for whose immediate benefit the investigation was to be carried out. The Committee further recommended that the sub-committees of the laboratory should be kept up to date and in close touch with the executive committee.

Subject to these observations, the Committee did not consider that any alteration was required in the scope of the work of the laboratory as defined by the Committee of 1898.

The report was signed by all the members of the Committee, but the

two members of the Committee who were also members of the Executive Committee of the Laboratory added a note expressing their opinion that the restriction recommended in respect of "contractual testing" should come to an end after a definite time; that a restrictive period of ten years would meet the case presented on behalf of private testing establishments, and would safeguard the interests of the public, which would, in their opinion, be best served by leaving the authorities entrusted with the administration of the National Physical Laboratory completely free (as is the case in the national laboratories of Germany) to exercise their discretion in accepting or refusing any description of testing work.

1907.

The Treasury Minute of February 1st, recorded the approval of the Lords of the Treasury of the recommendations contained in the Report of the majority of the Committee. They learned that the President and Council of the Royal Society accepted in principle the recommendations contained in the report of the Committee, and that the Executive Committee of the National Physical Laboratory had expressed their readiness to use their best endeavours to carry the recommendations into effect.

At the Thirtieth Annual General Meeting, held on March 2nd, 1908, Mr. A. Gordon Salamon, the Hon. Treasurer, in submitting the accounts, said that, owing to the increase in the number of candidates for the examinations and the exercise of economy in expenditure, the position of the Institute financially was improving. He warned the Fellows and Associates, however, that further funds would be required in view of the approaching expiry of the lease of the Institute's premises.

THIRTIETH
ANNUAL
GENERAL
MEETING.

The President, in his Address, said that the Annual Report bore evidence of distinct progress and healthy development.

Dealing with the difficulties of students in deciding the most advisable method of preparing for admission to the profession of chemistry, he advised all serious students to aim at the Associateship, and to shape their courses of study according to its Regulations. Without the qualification of the Institute, they would greatly restrict the field in which they could seek employment. The requirements of the Institute tended to broaden the base of chemical training, and could but usefully benefit the student in whatever branch of chemistry he might subsequently engage. He advised students also to work for Degrees with Honours in chemistry, so that they might be entitled to claim exemption from the Intermediate Examination. The Institute had put a high premium upon university study. He was sure that the leniency of the Examiners in the universities did not extend so far as to place any but really satisfactory candidates in the first or second class Honours Divisions, and statistics had shown that they had been as successful in the Final Examination of the Institute as candidates who had passed its Intermediate Examination. It was usually

1908.

THIRTIETH
ANNUAL
GENERAL
MEETING.

necessary for the candidate, after taking the Honours Degree or passing the Institute's Intermediate Examination, to obtain special training extending over at least a year before proceeding to the Final Associateship Examination. He was convinced that the usual three years' curriculum was wholly inadequate, for whilst the ground to be covered in the study of chemistry had attained colossal dimensions compared with what it was twenty-five years earlier and was continually being extended, the student's time was no more protracted than before. The student had little opportunity to take proper advantage of the excellent equipment now to be found in the universities and colleges; teachers were aware of the urgent necessity of increasing the minimum length of the curriculum prior to graduation; but no university appeared to have the courage to initiate this reform. In the matter of students, it was quality not quantity that universities required; for every science student was a net loss financially, and the work of the classes was too often hampered by a large proportion of undesirables.

Prof. J. Millar Thomson, in moving a vote of thanks for the Address, suggested the desirability of reprinting the addresses of the Presidents from the foundation as a means of keeping alive the interest of the Fellows and Associates in the history and development of the Institute.*

Mr. Blount, in seconding the vote, alluded to the evidence given by the President before the Treasury Committee appointed to enquire into the work performed at the National Physical Laboratory, and said that, so far as the result of the action of the Institute on this matter had been satisfactory, it was greatly due to the fair and convincing manner in which the President had represented the views of the chemical profession.

DEATH OF
DR. JAMES
BELL.

In 1908, the Council recorded with regret the death of Dr. James Bell, President from 1888 to 1891, which occurred on March 31st. For nearly twenty years (1874 to 1893) he was Principal of the Government Laboratories. He acted as the representative of the Institute when the original Bye-Laws were under the consideration of the Privy Council, and did much to secure the recognition of the Institute by Government Departments. He maintained a deep interest in the progress of the Institute until his death.

OFFICIAL
AGRICUL-
TURAL
ANALYSTS.

On the question of the security of tenure of appointments of Official Agricultural Analysts, Lord Carrington, the President of the Board of Agriculture and Fisheries, consented to receive a joint deputation from the Institute and the Society of Public Analysts, the interview being arranged to take place on May 14th; but he was prevented from receiving it personally as he was required to be in attendance on H.R.H. the Prince of Wales at a public function held on the same day.

* Such a reproduction would naturally involve the inclusion of many references of purely temporary interest; but it is hoped that the suggestion is substantially met by the abstracts given in this record.

However, as a number of representative chemists had travelled to London for the purpose, Sir Thomas Elliott, the Secretary of the Board, received the deputation at the offices of the Board. Mr. E. G. Haygarth Brown, one of the superintending inspectors of the Board, was also present. The deputation consisted of Sir William Ramsay, Vice-President of the Institute; Mr. R. R. Tatlock, President of the Society of Public Analysts, Mr. Edward Bevan, Col. Charles E. Cassal, Dr. Bernard Dyer, Mr. Thomas Fairley, Dr. John A. Voelcker, and the Registrar. A report of the interview was published in *Proceedings*, Part III., 1908.

Sir William Ramsay said that in the interests of the public it was essential that chemists entrusted with the administration of the Act should be well trained and qualified in every respect. Dismissals for no valid reason cast a slur on highly competent men, and made the appointments less attractive; so that, unless something could be done to provide greater security for their tenure of office, the appointments would in all probability devolve on less experienced men. Sir William read a memorandum, the full text of which was given in the report, and commented on the various points raised in it. He showed how the provisions of the Sale of Food and Drugs Act, 1875, and the Fertilisers and Feeding Stuffs Act, 1906, differed in respect of the powers conferred on the controlling Government Departments. Under the former, both the appointment and the removal of Public Analysts were subject to the approval of the Local Government Boards, whilst under the latter only the appointment of Official Agricultural Analysts was subject to the approval of the Board of Agriculture and Fisheries.

The Councils of the Institute of Chemistry and of the Society of Public Analysts suggested that the official agricultural analyst should be placed in a position at least as satisfactory as that in which the Sale of Food and Drugs Act sought to place the public analyst—namely, to put him under the protection of the Board, and at the same time to render the protection effective by avoiding loopholes for evasion, such as had been discovered in the older Act.

That there was real need of such protection was shown by recent cases, which had given rise to correspondence between the Board and the local authorities, the Board having made a strong effort to dissuade the local authorities from making changes in the appointments except on substantial grounds, but being without power to veto the dismissals against which expostulation was made. In one such case, the analyst was removed from his position by the simple and summary process of not renewing his annual appointment, which he had held since the original Act of 1893 came into operation: without any intimation whatever of any intention to remove him, the announcement was made that he had not been reappointed, and that another analyst had been appointed in his place.

There were other reasons for urging that such insecurity of tenure of office was undesirable. Official agricultural analysts, as well as public analysts, were placed in a position of trust in connection with Acts of Parliament, the breach of which was regarded as a criminal offence. Their certificates might at any time result in a prosecution, or, in the case of the Fertilisers and Feeding Stuffs Act, might be used for the

enforcement or adjustment of civil rights involving money claims, which might be heavy; and, even when no legal proceedings were involved, questions of commercial credit or discredit arose which might seriously affect the reputation of individuals. It was one of the great principles of English jurisprudence that judges and magistrates should be appointed permanently, being liable to removal only by a mode of procedure involving a petition to the Crown; the object of such fixity of tenure being to place them in such a position that they were removed from even the suspicion of temptation to be influenced in any decision by the possible effect that might thereby accrue to the stability of their official positions. While it is not suggested that the office of analyst should have attached to it quite the same rigid permanence, yet it was urged that an analyst, who at any moment might have to report adversely on goods sold by persons who were in a position to excite undue sympathy on the part of some county councillor, should not be in a position which subjected him to the chance of finding himself removed from his appointment by the simple process of non-renewal of an annual appointment.

It was not suggested that any local authority in the kingdom would consciously dismiss an analyst for doing his duty, but there were various ways in which committees might be unconsciously influenced to substitute one analyst for another without suspecting how or why the suggestions for change had originated.

If the appointments of analysts under these Acts were by law constituted permanent, subject only to determination with the consent of the Government Departments directly concerned, the position of the analyst would sometimes be rendered less difficult, and would tend to operate in the direction of increased security for the public, or that section of it whom he existed to protect.

Even fixity of tenure of office, however, subject only to the pleasure of the Boards and not merely to that of the local authority, would not go far enough to secure the advantage which would accrue to the analyst and to the public without regard to a further point in the terms of his appointment. Some analysts had been driven to resign, not actually by threatened dismissal, but by resolutions reducing their remuneration—or, which came to the same thing, by resolutions requiring them to do an unreasonably increased amount of work without additional remuneration. The tendency on the part of both county and borough councils to attempt to cut down the remuneration of their professional officers arose no doubt in many cases from the utter inability of the members of such councils to understand the nature of the work involved in the process of making analyses, or of the time that it occupied or of the expenses incurred. The ignorance of the public tended to depreciate the value of such professional services.

It was suggested that the Board should introduce into Parliament a short Bill amending section 1 (4) of the Fertilisers and Feeding Stuffs Act, 1906, providing:—

“(a) that not only the appointment, but also the terms of the appointment (including the terms of remuneration), of an official agricultural analyst shall be subject to the approval of the Board;”

and further that:—

“(b) notwithstanding any terms relating to the duration of his appointment under which any official agricultural analyst may have been heretofore or shall be hereafter appointed, his tenure of office shall not terminate or be determinable without the approval of the Board.”

The other members of the deputation endorsed the views submitted in the memorandum.

Sir Thomas Elliott said that the Board recognised the weight of the arguments which had been submitted. From the passing of the first Act, the Board had realised the importance of securing the services of good analysts, and he thought that in this respect they were in as favourable a position as any country in the world. The Board realised also the advantages of continuity in the service of such officers. The analysts had to be trained, they had to maintain expensive laboratories, and to keep their knowledge up-to-date for the benefit of the public. If they only held office for a year or so, their experience was wasted; but, by continuous service, they became every year more efficient and better acquainted with local conditions. He agreed that in quasi-judicial appointments there should be stability: it gave the holders more confidence, and they should not be subject to removal at mere caprice. However, besides the chemists and the Board, there was a third party to be considered, namely, the local authority. The deputation were perhaps unconsciously raising a question of great difficulty as to the division of powers and duties between central and local authorities. Even if more power were given to the Board in this matter, it might still be difficult to exercise it. They had experience of a case where the Board and the local authority held different views as to an appointment of an unqualified man, and for years no analyst was appointed.

He would endeavour to obtain an opinion on the matter from the County Councils Association, the Municipal Corporations Association, and also from the Local Government Board. There was, perhaps, a bias in favour of power being given to local rather than to central authorities. If a case of unjustifiable dismissal occurred, the Board would communicate with the local authorities and do what they could to cause the matter to be fully considered. In the case of the action of one county council the Board learned that, in dismissing their analyst, some of the members of the council had no idea that this was being done. He believed in the importance of making such matters public, and hoped no further cases of the kind would arise. There was little chance of introducing an amending Act to one passed so recently as 1906; but the Board recognised fully the force of the case which had been represented to them, and would see what could be done to further it.

In *Proceedings*, Part IV., 1908, the attention of the Fellows and Associates was directed to a paragraph which appeared in a circular dated October 6th, 1908, issued by the Board to local authorities concerned:—

“In many cases appointments of official agricultural analysts and official samplers are made for a year. The formalities connected with the making and approval of annual appointments involves the expenditure of an amount of time on the part of the clerical staff of the Board and local authorities which is, in the aggregate, considerable, and I am to suggest that in many cases it would be found more convenient to make these appointments “during the pleasure of the Council,” with provision for reasonable notice to the official concerned of any proposed change, instead of for a specified period. The Board understand that the County Councils Association consider that in the case of an official agricultural analyst six months’ notice would be reasonable.”

1908.

From this, it appeared that the Board had consulted the associations representing the municipal and county authorities upon the question, and that provision might be made for giving at least six months' notice in the event of a local authority desiring to effect a change of officer.

LEGISLA-
TION.

In reply to the representations made by the Institute and the Society of Public Analysts with reference to the administration of the Sale of Food and Drugs Acts, Mr. John Burns, as President of the Local Government Board, intimated that while he did not think it necessary that a deputation should attend at the Board, he would be prepared to consider suggestions submitted in writing. A letter signed jointly by the Presidents of the Institute and the Society of Public Analysts was therefore addressed to Mr. Burns on July 15th, 1908, the full text being published in *Proceedings*, Part IV. The main points were summarised in the suggestion that the Local Government Board should introduce in Parliament a Bill providing :—

(a) That not merely the appointment and removal, but also the terms and conditions of the appointment (including specifically the terms of remuneration), of a public analyst should be subject to the approval of the Local Government Board.

(b) That notwithstanding any provision relating to the duration of appointment under which any public analyst might have been heretofore, or should be thereafter, appointed, his tenure of office should not terminate nor be determinable, nor should the terms of his remuneration be alterable, without the approval of the Local Government Board.

(c) That public analysts should be entitled to appeal to the Local Government Board on all matters relating to their office.

(d) That when fresh legislation had the effect of increasing the work of the public analyst, some arrangement should be made for the adequate readjustment of his emoluments.

The letter also referred to the deputation from the Institute and the Society to the Board of Agriculture, and to the views then expressed by Sir Thomas Elliott.

In conclusion the Presidents expressed the hope that, by the joint action of the Local Government Board and the Board of Agriculture, it might be possible to deal with the positions of both public analysts and official agricultural analysts in one measure, simultaneously amending both the Sale of Food and Drugs Act, 1875, and the Fertilisers and Feeding Stuffs Act, 1906, in the directions indicated.

A copy of the letter was also forwarded to the Secretary for Scotland, the Local Government Board for Scotland not being then constituted.

1908.

The Board, in reply, promised that these representations should receive further consideration in connection with any fresh legislation that might be proposed for the amendment of the Sale of Food and Drugs Acts ; the Secretary for Scotland also undertook that the proposals should receive careful consideration.

The Public Appointments Committee continued to watch the proceedings of local authorities in connection with the appointment of public analysts, and the Council took action in several cases, among which were two in which the Council felt it their duty to protest against the practice of offering these professional positions to tender. Letters were addressed to the local authorities expressing the regret of the Council that the appointments should have been offered in terms which suggested that it might be given to the candidate making the lowest tender. PUBLIC ANALYSTS.

In the case of appointments the qualifications for which were of a purely personal character, the system of inviting professional men to tender had the effect of lowering the status of their profession, to the detriment of the public service. Analysts of repute felt precluded from becoming candidates for appointments so offered, and the selection was therefore limited, thus rendering it unlikely that the authorities would secure the services of the best men by entrusting the positions to those who placed the least value on their skill, experience and professional position.

A similar communication was addressed to an Irish Board of Guardians who had also invited applications for an analytical appointment, referring to the candidates as " the persons tendering."

It was obvious that an extension of this system would lead to the degradation of the general status of the holders of such appointments, and the Council, therefore, considered it undesirable that Fellows and Associates should apply for positions advertised in this manner.

The Report of the Local Government Board for 1908—1909

H.I.C.

P

1908.

PUBLIC
ANALYSTS.

contained the following statement confirming the views of the Council :—

" Our attention has been drawn to the practice which has been adopted recently by certain local authorities of inviting applicants for the office of public analyst to state the terms upon which they are prepared to accept the appointment. We consider the offering of such appointments 'on tender' as open to strong objection, and we trust that the practice will be discontinued."

Further instances of offering appointments to tender occurred however, in subsequent years, and the Council, in each case that was brought to their notice, directed the attention of the authorities concerned to the opinion expressed by the Board on this matter.

REGULA-
TIONS.

In revising the Regulations in 1908, the Council decided to allow any candidate who had passed the Final Examination for the degree of B.Sc. in a recognised University, with First or Second Class Honours in Chemistry, to apply for admission to the Final Examination, without reference to the institution in which he had been trained, provided he satisfied the Council with regard to his training in theoretical and practical Physics, Mathematics, and one of the approved optional subjects.

DEATH OF
SIR THOMAS
STEVENSON.

On July 27th, the Institute suffered the loss, by death, of Sir Thomas Stevenson, President 1897–1900, one of its most enthusiastic workers, who, from its foundation, had maintained a lively interest in its welfare and progress. During his presidentship the syllabus of the Final Examination in the Chemistry of Food and Drugs was modified and extended so as to meet the requirements of the Local Government Board, and by this means Fellows and Associates who had passed the necessary tests became officially recognised as competent to hold appointments as public analysts. The Institute owed a special debt to Sir Thomas Stevenson for his services as Honorary Examiner in Therapeutics, Pharmacology and Microscopy from 1898–1901.

Prof. Frankland, in referring to this loss in a Presidential Address, said that "... Sir Thomas Stevenson was one of those men who leave an indelible impression on all who know them. In talking with him, one immediately recognised the presence of a successful man, with wide experience of the world, who was nevertheless quite untainted by those petty ambitions, that childish vanity, and the ludicrous egotism which unfortunately too often disfigure men who have made their mark in the professions. His high sense of duty, his

urbane and genial manner, and his extreme modesty withal, rendered him as widely popular as he was highly esteemed. I have no hesitation in saying that his was an influence for good in our midst which we can ill afford to lose."

1908.
—

In *Proceedings*, Part IV., 1908, the Council reported that they had considered a scheme for helping Fellows and Associates who were seeking appointments. Acting on the report of a Special Committee, consisting of the President, with Dr. M. O. Forster, Mr. Oscar Guttman, Mr. Otto Hehner, Sir William Ramsay, and Dr. J. A. Voelcker, appointed to deal with this matter, the Council decided that a Register should be kept for the assistance of Fellows and Associates who were seeking appointments, and that any Fellow or Associate, on payment of postal expenses, should be entitled to have his name placed on the Register for a period not exceeding six months, at the expiration of which the Council might authorise his name to be kept on the list for a further similar period. Any Fellow or Associate applying to be so registered was required to furnish particulars of his age, date of admission to the Associateship or Fellowship of the Institute, the special branch in which he desired to practise, previous experience and positions held, if any, and the names of references. Those who obtained appointments were required to communicate with the Registrar as soon as they obtained employment, in order that their names might be removed. The existence of the Register was made known, from time to time, in the Institute's publications and announcements; but it was stipulated that beyond acquainting those whose names were on the Register with the particulars of vacant appointments, neither the Institute nor its officers could take part in, or be held responsible for, any negotiations which might follow. Fellows and Associates were invited to communicate with the Registrar in any instance in which they were able to assist in finding employment for qualified professional chemists.

APPOINT-
MENTS &
REGISTER.

The Appointments Register has been developed as one of the most successful departments of the work of the Institute and continues to be of valuable service both to employers and to the Fellows and Associates, more especially to the younger members beginning professional life.

1893-1909.
FINANCES.

It has been recorded that until 1893, when the Institute came to occupy its own premises, the surplus of income over expenditure, each year, was usually fairly considerable and, under these circumstances, a reserve fund of some £6,500 was accumulated—representing an average annual saving of about £400. It had become practically impossible for the Institute to conduct its business adequately without suitable headquarters, though, for a few years after the move to Bloomsbury Square, some difficulty was experienced in meeting the additional expenditure. It was found necessary to raise the entrance fee to the Fellowship from four guineas to the limit of five guineas prescribed in the Bye-Laws, and to increase the fees for the examinations—previously conducted at a heavy loss—from two to five guineas for each examination. Owing, however, to the practical nature of the examinations of the Institute, these fees were found only sufficient to meet the immediate cost, when all expenses, over and above the Examiners' fees and the supply of materials and apparatus, were taken into account.

To recover the outlay involved by the purchase of a lease of 30, Bloomsbury Square, and the building of the laboratories, the Council, acting on the advice of the Honorary Treasurer (then Mr. David Howard) and the Finance Committee, secured two Redemption Policies under which the sum of £3,755 would be repaid in 1914. The small reserve in investments then possessed by the Institute was valued at about £2,700, mainly representing life compositions received since the foundation. Care was taken to invest all such fees, so that the dividends should provide income in lieu of annual subscriptions. The number of Life Fellows in 1909 was 162, and the dividends of the Institute, from all investments, produced only about £100 per annum; but, according to the scheme upon which the scale of Life Compositions was based, it was estimated that the amount of the dividends would, in the course of time, bring in a return more nearly commensurate with the loss of annual subscriptions. The annual financial statements of the Institute from 1893—1908 showed that practically all its available income had been required for maintenance and development; in the opinion of the succeeding Councils, this policy was

necessary to enable the Institute to attain an assured status among the professional chartered bodies. 1893-1909.

Though the accumulation of funds could not be regarded as part of the duty of the Institute, the support of a good reserve fund was an important consideration to an institution the scope or work of which could be so widely extended. Thus, when the Council found that, owing to improvements to be effected by the London County Council, they were unable to obtain the renewal of the lease of 30, Bloomsbury Square, they appointed, toward the close of 1908, a Special Committee to consider the financial position of the Institute, and to advise on the problem of securing new laboratories and administrative offices.

It should be noted that even if it had been possible to obtain a renewal of the lease, it appeared likely that the site of 30, Bloomsbury Square would bear such a heavy ground rent that the renewal could only have been effected on terms which the income of the Institute would not have justified the Council in accepting. Owing to improvements which had been carried out in the immediate neighbourhood, the rateable value of the surrounding property had steadily advanced, and the assessment value of the premises of the Institute had been increased considerably, though an appeal to the local assessment committee had resulted in a considerable reduction on the sum they had proposed at the previous quinquennial valuation. The premises, however, had proved in every way economical, compared with the rental charges and expenses of maintenance borne by similar institutions, and, until recent years, had provided the Institute with sufficient accommodation during an important period of its development.

The Special Committee reviewed the fees and subscriptions paid by members of the legal, medical, engineering, and other professions, but, recognising that in most cases the Fellows and Associates of the Institute were necessarily also members of other scientific and professional societies, and that this entailed expense bearing somewhat heavily upon the younger members, the Committee came to the conclusion that it was inadvisable to increase the annual subscription ; and further, that in order to maintain the affairs of the Institute

BUILDINGS
FUND.

1909.
BUILDINGS
FUND.

on a sound basis, a sum was needed considerably beyond the resources then at its disposal. Under these circumstances, instead of raising the subscription, the Committee recommended that a Buildings Fund be established, to which all Fellows and Associates should be invited to contribute according to their means.

After considering evidence as to the values of suitable sites, the character of the housing possessed by other professional bodies and the cost at which it had been secured, and the probable resources and needs of the Institute in the future, the Committee formed the opinion that it would be imperative to raise, by voluntary subscription, possibly as much as £15,000. As the bulk of this sum would not be required until 1913 or 1914, it was suggested that donations be invited, either in one sum or in subscriptions spread over a period of five years, and, in this way, it was hoped that almost every Fellow and Associate of the Institute would find it possible to contribute. Obviously, the immediate establishment of the fund would permit interest to accrue on the investment of the amounts received before building was begun.

The Committee were aware that the raising of such a sum would involve a determined effort, but they hoped—and this hope has been duly realised—that others than Fellows or Associates, who were interested in chemical science and were appreciative of the advantages, to the public as well as to the profession, of the guarantee of competency which the Institute provides, would support the Fund.

FINANCES.

With regard to the current expenses of the Institute, the Committee took into consideration the fact that when the Redemption Policies already referred to fell due, the payment of the premiums, amounting to £138 15s. per annum, would cease and income would accrue from the investment of the proceeds of the policies. It was anticipated that this saving would be more than counterbalanced by the increase in rent, rates, and cost of maintenance in the new premises; but if the rate of increase in the roll of the Institute were maintained, though it would be necessary to exercise careful economy, it was reasonable to expect that the annual income would be sufficient without increasing the annual subscription.

The Report of the Committee was adopted, and it was

referred to the new Council to appoint a Special Committee to carry out the scheme (p. 237).

1909.

At the thirty-first Annual General Meeting, held on March 1st, 1909, Prof. Frankland delivered his third Presidential Address, in which he reviewed the work of the Council during his term of office.

THIRTY-
FIRST
ANNUAL
GENERAL
MEETING.

Particular attention had been given to the educational side of the Institute's activity, and he referred to five important changes: the transference of Latin to the list of optional subjects in the Preliminary Examination; the formation of a Board of Examiners who were jointly responsible for the Examinations; the introduction of written papers in the Final Examinations; the requirement of a working knowledge of French and German on the part of all candidates for the Final Examination; and the holding of more frequent examinations in India, in the Colonies, and in various educational centres of the United Kingdom.

The President remarked that there was no finality either in the syllabus of the Examinations or in the courses of training demanded; such arrangements would require frequent remodelling, as the development of science and improvement of facilities of higher training might dictate and render possible. He then referred to the criticism of the Institute advanced by Prof. Kipping in his Presidential Address to the Chemical Section of the British Association, at the meeting in 1908, wherein he had indicated that the Institute had not sufficiently recognised the necessity of research work, and had suggested that evidence of original work should be insisted on in the case of all candidates for the Fellowship. Prof. Frankland reminded the Fellows that the results of research were not necessarily recorded in the *Transactions* or *Proceedings* of the Royal Society, or in the pages of other scientific journals. There was a vast amount of research involving originality and attainments of the highest order which from its very nature could not be published at all, and he asked whether it would be just that chemists who were engaged on such research should be debarred from the Fellowship because their names were not at the head of so many dozen pages apiece of the *Journal of the Chemical Society* or in a similar publication. He would assure Prof. Kipping that he had met chemists whose names were not associated with academic researches, but who were nevertheless fully equipped and highly original investigators. Should these men not have been admitted to the Fellowship of the Institute? Succeeding Councils had built up an organisation of real flesh and blood, and not a paper Utopia. It could not be denied that the Institute had by its policy, during its existence, enormously improved the theoretical and practical equipment of professional chemists, and that it had stimulated hundreds to pursue courses of study which but for the Institute would never have been undertaken at all; that the examinations were specially distinguished as tests of original capacity as well as of theoretical attainments, manipulative skill, and knowledge of routine methods; and he pointed out, moreover, that the Examiners were empowered to take into consideration any research work which any candidate might previously have carried out. He would yield to none in the advocacy of research as a part of training, but one should not be misled by an empty phrase or mere nomenclature. There was much training in

1909.

THIRTY-
FIRST
ANNUAL
GENERAL
MEETING.

originality of thought and experimental procedure which was not called research, and much of what was called research that involved no originality in the thought or deed.

Prof. Frankland again referred to the work of the various Committees, showing how the Institute had endeavoured to promote the interests of its members. He made special reference to protests made by the Council against professional chemists being invited to apply for appointments by tender, and appealed to the Fellows and Associates to assist in the endeavour to discourage this sinister development. The Institute had lately taken steps to establish an Appointments Register, and had already succeeded in placing a number of members in good positions; steps would be taken to make manufacturers and other employers aware of the existence of this register, which promised to be most useful.

Passing to the most important item in his Address, he outlined the report of the Special Committee which had considered the position of the Institute in view of the approaching expiry of the lease. The Committee had come to the conclusion that about £15,000 would have to be raised by voluntary contributions, in order to provide even a modest but dignified home in which the Institute could carry on its administrative work and conduct its examinations. The Institute did not require a pretentious exterior or luxurious interior, but they wanted more commodious laboratories, offices, and library. The sum indicated would leave no margin for extravagance. The Committee had prepared a pamphlet setting forth the work of the Institute, discussing its present and prospective financial position, and giving a clear account of the aims in view. He urged the Fellows and Associates to read it carefully, after which he felt sure they would make such contributions as they could afford. Their joint action and personal sacrifice would continue to bear fruit in the time which is to come, long after they had become sleeping and forgotten members of that professional brotherhood in which it was their privilege now to be active workers.

PRESENTA-
TION TO MR.
DAVID
HOWARD.

At the same meeting, the President presented, on behalf of the Fellows and Associates, an Illuminated Address to Mr. David Howard, in recognition of his services to the Institute in various capacities—as member of Council, Honorary Treasurer (eighteen years), President, Vice-President, and Censor—extending altogether over thirty years; at the same time congratulating him on the approach of his seventieth birthday, while yet retaining his health and vigour.

Mr. David Howard, in reply, said that as a man grew old he began to think of what he had done. Whatever effort or labour he had devoted to the work of the Institute of Chemistry, he felt he did not deserve all the President had said. He had served on the Council under Sir Edward Frankland, and it was a great pleasure to receive the Address from his son. The founders of the Institute had worked hard and with self-sacrifice for the Institute. They had nothing to gain, and were looked upon as wild enthusiasts in trying to make a profession of chemistry. There was at that time just a beginning of the profession; now the Institute could look back on the splendid work of the past, and it was for the younger men to work for its progress in the future.

On the retirement of Prof. Frankland from the Presidency, the Council recorded their high estimation of his eminent services, to which they attributed much of the progress made by the Institute during his period of office.

1909.

Following on the references to research, made by Prof. Frankland in his Address, a letter from Prof. Kipping appeared in the *Chemical News* in which he intimated that his views had been misunderstood. He suggested that the Institute should distinguish between those who were capable routine chemists and those who might be expected to advance pure and applied science. The fact that an Associate had shown himself capable of carrying out good original work should forthwith entitle him to demand the Fellowship.

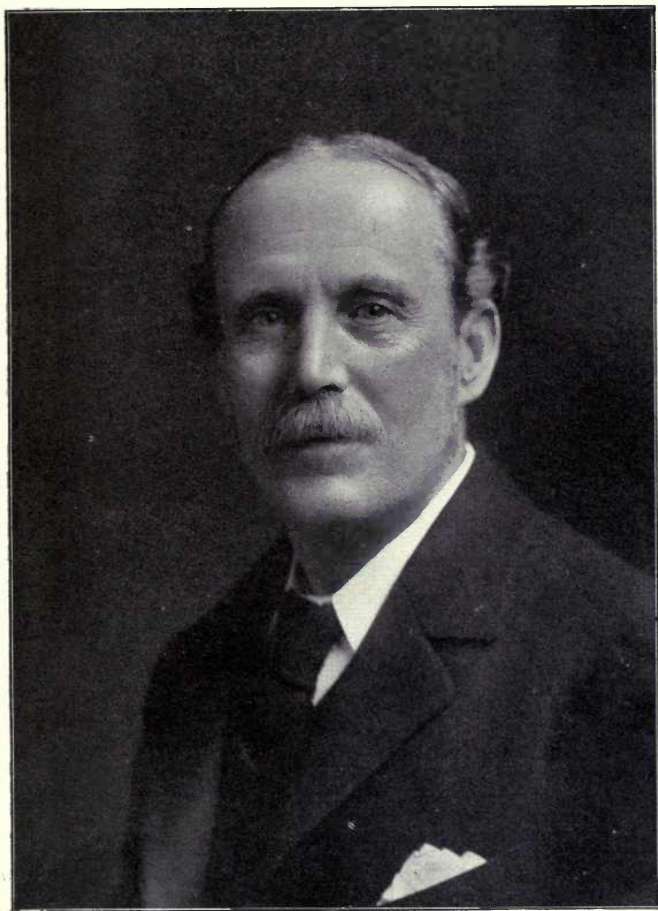
Prof. Frankland, in reply, freely admitted that it would be desirable that Fellows should possess greater capacity and higher attainments than were demanded of Associates, but he held the opinion that it did not appear possible, under existing conditions, to base that higher qualification on the candidate's research record. It not infrequently happened that the work performed by chemists in practice was of a private and confidential character, and its value could not therefore be judged by the Council. The machinery for recognising published research work already existed in the conferring of the D.Sc. degrees of the several Universities and in the Fellowship of the Royal Society; but this machinery could take no cognisance of confidential investigations such as might be performed in connection with chemical industry. Were the Institute, therefore, to impose a restriction upon the Fellowship, it would be necessary for chemists engaged in confidential investigations also to carry out independent publishable research work in order to qualify for the higher diploma, which would be accessible to the academic chemist without any such additional burden. The injustice involved in such an arrangement was manifest.

Under the existing regulations, the Fellowship implied more mature attainments than the Associateship, in that every Associate applying for admission to the Fellowship was required to produce evidence that he had, for a period of three years since his admission, been continuously engaged in the

1909.

study and practice of chemistry *in a manner satisfactory to the Council*. It was by a progressive interpretation and administration of this clause that the Council could most judiciously raise the dignity of the Fellowship above that of the Associateship qualification. The Council had systematically increased the stringency of the requirements for the Associateship, and had been successful in building up a chemical qualification which in some respects was quite unique, not having its counterpart in any university diploma.

The question is of special interest, particularly in view of the proceedings of the Conference of Professors of Chemistry held in 1913 (p. 277).



[Elliott and Fry, Ltd.]

GEORGE THOMAS BEILBY, LL.D., F.R.S.

President : 1909—1912.

GEORGE THOMAS BEILBY: PRESIDENT, 1909—1912.

Dr. George Thomas Beilby, Chemical Engineer, of Glasgow, was elected President in succession to Prof. Percy Frankland. He had already served as a Member of Council and Vice-President of the Institute, and had been President of the Society of Chemical Industry (1899), and President of the Chemical Section of the British Association at the meeting in South Africa (1905). His interest in the cause of higher education in applied science had been shown by his occupying the position of Chairman of the Board of Governors of the Glasgow and West of Scotland Technical College, now the Royal Technical College. He was the first President of the Institute to be resident in Scotland.

The practice of taking "informal" or "test" samples under the Sale of Food and Drugs Acts had become more general when the attention of the Council was directed to a circular, dated December 8th, 1908, issued by the Local Government Board for England and Wales, containing the following passage:—

"If with a view to preliminary investigation, any informal samples have been collected and dealt with otherwise than by submission to the Public Analyst, the Board would be obliged if you would forward to them a short statement of the procedure adopted in such cases."

Copies of the circular were sent to the clerks of the local authorities under the Acts, with instructions to transmit a copy to the public analyst in each case; but the analysts did not in all cases receive them. The intention of the circular was to enable the Board to obtain information, but it appeared to the Council to suggest that test samples might be sent to other persons than public analysts. It was doubtful whether there was any statutory power authorising the taking of samples except as provided in the Acts; but it appeared

1909.
PUBLIC
ANALYSTS.

advisable that test samples, if taken, should be examined by analysts approved by the Board, inasmuch as the preliminary tests applied by other persons might easily prove misleading, and might actually foster fraud by preventing the submission of articles to the public analyst. At the same time, it was obvious that if only the doubtful samples, on which legal proceedings were likely to follow, were submitted to the public analyst, his position would be rendered untenable.

HONORARY
CORRE-
SPONDING
SECRE-
TARIES.

In 1909, a Special Committee was formed to consider the question of appointing local representatives of the Institute in various parts of the Empire. A suggestion had been submitted by Prof. N. S. Rudolf, that a Fellow resident in India should be elected on the Council to represent the Fellows in that Empire. The Committee were of opinion that if representation of various over-seas dominions were arranged, the activity of the Council would be weakened, on account of the impossibility of the representatives being able to make more than occasional attendances at meetings. There was, however, a general feeling that the appointment of local representatives, though not as members of the Council, would be advantageous, and would further the work of the Institute in connection with the promotion of higher chemical education, in arranging for local examinations, and in watching professional interests. The Council, therefore, resolved to appoint Honorary Corresponding Secretaries, whose main duties would be to afford information to candidates desirous of joining the Institute, and to advise the Council with respect to matters of local professional interest. A number of Fellows were asked to act in this capacity.

The main duties of the Honorary Corresponding Secretaries were subsequently defined as follows :—

1. To afford information to candidates desirous of joining the Institute.
2. To advise the Council with respect to matters of local professional interest.
3. To supply from time to time particulars concerning the position and prospects of the profession of chemistry and the general conditions of official and social life in their respective districts, so as to afford useful information to Fellows and Associates contemplating taking up appointments in the British Dominions and abroad.

4. To inform the Registrar of actual or prospective vacancies in connection with chemical appointments in their districts with which they might become acquainted, and to help in maintaining the correctness of the information in the "List of Official Chemical Appointments" published periodically by the Institute.

1909.

From several of these representatives the Registrar has received particulars relating to the conditions of life in various parts of the Empire, and this information is now held available for Fellows and Associates proposing to take up appointments abroad.

Misconception occasionally existed in the minds of members of local authorities, and sometimes of Government officials, with regard to the status of chemical officers. The Council of the Institute found it necessary, in such cases, to make representations to the authorities concerned, indicating that, in the profession of chemistry, as in the older learned professions, a high standard of general education, in addition to technical knowledge, was demanded, and that its members were entitled to recognition similar to that accorded to other professional men. The action of the Council invariably resulted in a better understanding in such matters, and authorities realised more generally that only by the acceptance and due appreciation of these facts could competent and experienced chemists be expected to accept appointments in the public service. PUBLIC APPOINTMENTS.

In connection with the compilation of a new edition of INDIA. "Official Chemical Appointments" it was noted that the authorities of the Government of India made no return of the professional chemists attached to the Ordnance Department. On inquiry it was found that, although these chemists had been gazetted as officers on their appointment, they were classified on a lower grade in the official lists of the Government. The attention of the Secretary of State was directed to this circumstance, and the position of these officers was somewhat improved. The alterations, however, did not affect those in receipt of salaries of less than Rs.450 per mensem. It was obvious, therefore, that those who wished to retain professional status would hesitate to accept such appointments at salaries below that limit. The Council warned Fellows and Associates accepting appointments in

1909.
PUBLIC
APPOINT-
MENTS.

India that, in view of the official and social conditions existing in that Empire, they should ascertain that they were properly gazetted as officers under Civil Service Regulations as to pension, leave, allowances for travelling, etc., and that their appointments were duly announced in the *Government of India Gazette*; and, moreover, that their status as professional men was properly recognised under the regulations of the department to which they became attached.

PROFES-
SIONAL
INTERESTS.

Other matters of professional interest were frequently submitted to the consideration of the Council, and among those received in 1909 were several referring to the acceptance of analytical and consulting work by teaching institutions. Until the supply of competent consulting and analytical chemists had been considerably augmented, the practice of the profession was largely in the hands of professors of chemistry, but in the course of time these conditions had become changed. The professors and teachers had to cope with the training of larger numbers of students, and few desired to compete with the new generation; indeed, the majority declined to accept private practice. The Council recognised that in some instances professors and teachers undertook such practice with the approval of their authorities, so that they might have opportunities for keeping in touch with consulting technological work. The Council, however, were of opinion that investigations carried out at municipal colleges for their respective local authorities, if permitted, should not be conducted at the expense of education grants, and that if such work were done for private individuals and firms, at fees lower than those customarily charged by professional chemists in the respective districts, injustice might be inflicted on such chemists. It was not desirable that public institutions should foster competition against private individuals who had to maintain their own laboratories.

It may be mentioned here that some apprehension arose among the Fellows in an important industrial centre with regard to a Bill submitted in Parliament, in 1911, under which powers were sought, by the municipal corporation, for the institution and maintenance of a textile testing and conditioning house, in connection with the local technical school. It was feared that the proposal might be detrimental to the

interests of practising professional chemists, and the Council therefore appointed a special committee to investigate the matter, with a view to the promotion, if necessary, of opposition to the clause. After consultation with the solicitors and a number of Members of Parliament, it was found that there was not sufficient evidence of any likelihood of interference with analytical practice, as a consequence of the measure, to justify the Council in proceeding further in the matter.

Attention was also directed to the efforts made by some manufacturing firms to obtain analytical work, the analyses being carried out by chemists in their employ. The Council expressed the opinion that professional chemists should not allow their names and qualifications to be used by such firms, and that they should avoid being concerned in any form of "cover work," where it was based on the unprofessional practices of advertising, soliciting and undercutting. The qualifications for practice being entirely personal, it was but reasonable to expect that the public should rely on the protection afforded by the acknowledgment of responsibility by competent professional men.

In the same year, the Council had under consideration the terms and conditions relating to the proposed appointment of public analyst to a certain county council. These terms were so unsatisfactory that the Council felt obliged to inform the local authority that the work required could not be properly carried out for the remuneration offered. The Council strongly deprecated the acceptance of any appointment in such circumstances, even though other ulterior advantages might accrue or there might be some possibility of subsequently improving the terms. They decided, therefore, to issue a notice to Fellows and Associates to the effect that they would disapprove of any Fellow or Associate of the Institute applying for the appointment. The authorities of the Local Government Board for Ireland, and of the Department of Agriculture and Technical Instruction for Ireland, were informed of this action, which formed a precedent for proceedings of the same nature adopted subsequently in similar cases.

The growing tendency of local authorities to reduce the emoluments of professional scientific officers forced

PUBLIC
APPOINT-
MENTS.

PUBLIC
APPOINT-
MENTS.

1909.

PUBLIC
APPOINT-
MENTS.

the Council of the Institute to adopt this unusual measure. Unsatisfactory conditions could hardly fail to affect the administration of the Acts, and undoubtedly injured the status of the profession as a whole. It had become imperative that an effort should be made to induce authorities to realise the importance of offering terms which would attract properly qualified and reliable professional chemists for public offices. The Council were convinced that Government Departments would confirm the appointment only of fully-qualified men, and therefore it became incumbent on the Fellows to endeavour to create and maintain a better position with regard to their professional standing and remuneration.

The unsatisfactory conditions under which many appointments in Ireland had been held were due in some measure to the practice of tendering for annual appointments. It appeared to the Council advisable on the determination of such appointments—although they might be advertised as vacant—if the previous holders were prepared to continue in them, that other members of the profession should refrain from applying for them; such an understanding would accord with the etiquette observed in other professions, and the Council believed that the interests of the chemical profession would be promoted if this course were followed.

About this time the Public Appointments Committee had under consideration the provisions of the Public Health Officers' Bill, which had been introduced in Parliament in 1906 and was presented again in March, 1909. Its chief object was to amend the law relating to the qualification and tenure of office of medical officers of health and inspectors. It was thought that its provisions might possibly be amended to cover the question of the tenure of office by public analysts and official agricultural analysts; but, as any alteration in the Bill would affect a number of statutes other than the Public Health Act (London), 1891, the suggestion was not adopted.

BUILDINGS
FUND.

The Special Finance Committee appointed to establish the Buildings Fund prepared a preliminary list of contributors by private appeal to members of Council and a few other prominent Fellows, a sum of over £3,500 being promised by

less than fifty members. On October 28th, 1909, the President and the immediate Past-President issued a general appeal to the Fellows and Associates, with a pamphlet containing a review of the objects of the Institute, its progress in recent years, and a statement of its financial resources and probable future requirements. The fund at first made rapid progress ; so that when the Report of the Council for 1909-10 was published in February, 1910, the total had reached over £6,700. Shortly after this, the Council received the offer of a site which was regarded as suitable for the new building, but until the fund had been further advanced they did not feel in a position to proceed with negotiations or to submit any definite proposal to the Fellows and Associates.

Later, a sub-committee was appointed to consider the area necessary for the new headquarters, and they reported that the ground area should be approximately 4,000 square feet.* This would provide adequate rooms for General, Council and Committee meetings, with ample accommodation for a growing library, more suitable and better equipped examination laboratories, and more extensive offices for the staff. The last was particularly called for, as the constantly increasing activities of the Institute greatly added to the work of the office. It was also intended that provision should be made for residential quarters for the Registrar, which, however, could be utilised if at any time required for the business purposes of the Institute.

On November 12th, 1909, the Council had to deplore the death of Dr. W. J. Russell. He was an original Fellow and the first Examiner (1878—80), a Member of Council (1885—1886), a Vice-President (1897—1900), and a Censor (1885—90 and 1894—1904). Following Dr. Tilden as President (1894—1897), when the work of the Institute had become so much better defined, Dr. Russell's period of office was marked by steady progress without any very definite further development of policy. His efforts were mainly directed to encouraging the consolidation of the profession and the promotion of better relations between the members for their mutual benefit.

DEATH OF
DR. W. J.
RUSSELL.

* The area of the site now acquired is 4,160 sq. ft.

1909.
—

Although during the last few years of his life he did not occupy any official position in connection with the Institute, his continued interest in its affairs was shown by frequent visits to the office.

L. C. C.
SCHOLARS.

Early in 1910, the attention of the Council was directed by Professor Meldola to the fact that the London County Council allowed grants for paying the fees of the holders of their scholarships when taking the examinations of London University; and that a London County Council scholar at Finsbury Technical College, having applied for a grant for the payment of his fees for admission to the examinations of the Institute, the authorities of the college had recommended his application. The Council of the Institute determined to support the application, as it appeared to them that the payment of a student's fees for admission to a recognised professional examination was as worthy an object for the funds available for such purposes as the payment of fees for admission to the University. It was indicated that the objects of the examinations of the two bodies differed: that of the university examinations being to test the scientific knowledge of the candidate from the academic standpoint, and that of the examinations of the Institute being to test the knowledge and practical competency of the candidate for the professional practice of chemistry. As the result of the joint representations, the Education Committee of the London County Council placed the Institute, in this case, on the same footing as the University.

THIRTY-
SECOND
ANNUAL
GENERAL
MEETING

At the thirty-second annual general meeting, held on March 1st, 1910, the Honorary Treasurer reported that the promises for the Buildings Fund amounted to over £6,360 and that about half of that amount had been actually received. A short discussion followed with reference to the fund, several Fellows suggesting that the annual subscription should be doubled—as allowed by the bye-laws—in order that the raising of the necessary amount should not be left to a comparatively small number of generous donors.

Dr. Beilby delivered his first presidential address.

Referring to the work of the Council, he said that he was glad that the Council included a number of young Fellows, representing the modern

school of chemistry, who were able to bring new ideas and fresh light upon the work of the Institute. He directed attention to the recent appointment of honorary corresponding secretaries, through whom chemists in different parts of the Empire and in India could be kept in touch with headquarters; they would also be able to take an interest in candidates intending to join the Institute and to help the Council in arranging local examinations. He proceeded to show how the Institute had fulfilled the duties with which it had been entrusted by the Royal Charter, by providing for the community a class of properly qualified professional men for public chemical appointments, for general practice, and in connection with industrial concerns. The qualifications of the Institute were generally recognised as an outward sign of sound professional training; the Institute had undoubtedly influenced the teaching of the universities and colleges, and had fostered the supply of men who could not only talk about chemistry, but who were able to apply their knowledge usefully. He made a special appeal to the members to support the Buildings Fund, and expressed his gratitude to those who had already responded, especially to a number of corporations and firms, not directly connected with the Institute, from whom substantial donations had been received.

1910.

The question of introducing a regulation requiring candidates for the Associateship to undergo systematic training in methods of research came under the consideration of the Council in 1910; but it appeared to them that the three years' curriculum for the Intermediate Examination did not allow time for the average student to undertake original investigation. Efficient professional training involved an acquaintance with such methods, and between the Intermediate and Final Examinations many students carried out, in the course of their ordinary work, investigations of an original character such as commonly occurred in private practice, though not undertaken for publication. Moreover, the Regulations provided for the production, at the Final Examination, of records of any such work and its due consideration by the Board of Examiners. RESEARCH.

Towards the close of 1910, the Council, acting under the advice of the solicitors to the Institute, decided to discontinue the issue of annual certificates of membership. The solicitors were of the opinion that the provisions of the charter and bye-laws would be sufficiently complied with by the issue of a certificate to each Fellow and Associate when admitted and by giving, in acknowledgment of each annual subscription, a receipt stating that the certificate of Fellowship or Associateship had thereby been renewed for the year. The CERTIFICATE.

1910.

new form of certificate consisted of a statement on parchment that the member was admitted on a certain date; this was sealed, and signed by the president and the registrar and secretary.

POSTAL
RATES ON
SCIENTIFIC
JOURNALS.

The relations of the Institute to other bodies and educational institutions have been mutually co-operative, and, from time to time, the Council have appointed representatives to take part in important celebrations and public movements. Thus, at this period, when the principal scientific societies petitioned the Postmaster-General to obtain a reduction in the cost of postage of their monthly and bi-monthly publications, although the Institute did not publish a journal, the Council heartily endorsed the movement and urged the Fellows and Associates to do what they could to further it; for it was obvious that a great saving would be effected by scientific societies if their journals were transmissible at the proposed rate of 8 oz. for one penny. The hoped-for result was not attained, but it may be well to mention that in the opinion of the petitioners "the effect of the existing regulations was to tax literature of the educational, scientific, religious, and generally more valuable type more heavily than that of ephemeral or inferior or less permanent value, an inversion of true policy which obtains in no other country."

LECTURES.

Though the Council issued frequent notices to the effect that they were prepared to hold examinations in chemical technology, the entries were very few. It was realised, however, that their efforts to promote the better training of technological chemists had not been entirely wasted: many Associates and Fellows were interested in the syllabus of the examination and followed the advice given, without presenting themselves for the test. How further to bridge over the gap between the college and the works was a problem frequently discussed until early in 1911, when a suggestion was submitted by Professor Herbert Jackson, that the Council should institute a series of lectures on the higher branches of chemistry having a direct bearing on the applications of proved knowledge and methods to modern chemical practice.

The Royal Charter gave the Institute "power to afford facilities for the better education and examination of persons

desirous of qualifying themselves to be public and technical analysts"; "to apply funds in paying the salaries of professors and lecturers" and in ". . . . establishing and conducting classes for instruction in the science of chemistry and allied sciences."

In the early history, it has been shown that papers on professional and ethical questions were discussed, and a few lectures were delivered. It was now suggested that Fellows of the Institute having special knowledge and experience in various branches of practical work should be asked to deliver lectures which should be instructive chiefly to advanced students, such as those preparing for the Final Examination of the Institute; and that these lectures should indicate the scope and object of the work carried out in various branches of practice, while they might also deal occasionally with matters of professional forensic and ethical interest. With an educational rather than a technological aim, it was not intended that they should clash with work undertaken by other societies and institutions. The Council decided that the lectures should be open to Fellows, Associates, and registered students, and should be published and issued to all grades.

The Council appointed a special committee, designated the "Lectures Committee," empowered to make arrangements for the delivery of lectures, beginning during the following winter session. The Council decided that until the funds of the Institute allowed for further developments the lectures should be limited to four in each session, and that applications should be made to the recognised colleges in London, in turn, for the use of suitable lecture theatres, a syllabus of each lecture being issued beforehand.

At the thirty-third annual general meeting, held on March 1st, 1911, Dr. Beilby commented on this scheme.

Without depreciating the value of a broad scientific education, it was realised that students entirely trained in an academic atmosphere missed some of the advantages of the old system of private pupilage in the laboratories of practising Fellows or in works. This loss was met in some instances by students preparing, in such laboratories, for the Final Examination; but there was a need for means of introducing something analogous to the clinical instruction afforded to medical students. It was proposed, therefore, to ask Fellows having special knowledge to give lectures which would give students an insight into

1910.

THIRTY-
THIRD
ANNUAL
GENERAL
MEETING.

1910.

the actual work of the chemist, whether engaged in the application of his science to industry or to the scientific control of the affairs of daily life. Apart from the value of the information which could be imparted by such authorities, considerable advantage would accrue to the students from the mental contact with such men, while they would acquire a proper sense of proportion in respect of the work of chemists in various branches of practice.

Dr. Beilby remarked on the successful working of the Appointments Register, by which means the Institute introduced properly qualified chemists to authorities and manufacturers requiring their services. He also acknowledged the valuable help given by the honorary corresponding secretaries of the Institute to members taking up appointments in various parts of the Empire.

PUBLIC
APPOINT-
MENTS.

The growing importance of the services of professional chemists in various departments of public administration rendered the work of the Public Appointments Committee and the Council in such matters increasingly difficult. Frequent appeals were addressed to Government Departments and local authorities to assist the Institute in promoting the efficiency and usefulness of professional chemists in the public service, particularly in connection with the administration of the Sale of Food and Drugs Acts and the Fertilisers and Feeding Stuffs Act.

In a case brought to the notice of the Council in 1911, a local authority desiring to appoint a medical practitioner in the dual capacity of medical officer of health and public analyst, determined that the candidate selected should examine samples taken under the Sale of Food and Drugs Acts for three months in the laboratories of a public analyst, and that the Local Government Board should then be asked to confirm the appointment. The Council had frequently protested against this combination of appointments as being contrary to the provisions of Section 13 of the Act of 1875. It was obviously not intended that a medical officer of health should also hold appointment as public analyst, being a person who might be empowered by the local authority to take samples, and "if he suspect the same to have been sold contrary to any provision of this Act," to submit them "to be analysed by the analyst of the district" Any Fellow of the Institute of Chemistry qualified for the position of public analyst, would necessarily have had at least six years' training and experience and have passed the examinations approved by the Local Government Board; but the ordinary training of

a medical man was not such as to prepare him for the duties of the appointment, and, in the absence of broad chemical training, extending over at least three years (such as the Institute prescribed), it seemed unlikely that the proposal made by the local authority in this case could meet with the approval of the Board. In the interests of the proper administration of the Acts, the Council thought it desirable to direct the attention of the Board to the matter, and, in the meantime, they recommended that Fellows of the Institute should exercise care when called upon to give certificates or testimonials to persons having little or no previous chemical training, who had taken merely short courses under their direction. The local authority, in the case referred to, subsequently appointed a duly qualified public analyst.

In another instance, a county council, on learning that a younger practitioner was prepared to carry out agricultural analyses at lower fees than their duly appointed agricultural analyst, dismissed the latter and appointed the younger analyst, who thus found himself in an appointment for which he had not applied. The Board of Agriculture intimated to the local authority their view that frequent changes in these appointments were undesirable; but their powers were limited; they could not insist on the reinstatement of the dismissed analyst, and the new appointment was, therefore, eventually confirmed.

A new edition of the Regulations was published in July. The syllabus of the Intermediate Examination was remodelled and brought up to date, and, to make the Final Examination in the Chemistry of Food and Drugs suitable for agricultural chemists as well as for public analysts, the syllabus was revised to include the analysis of fertilisers and feeding stuffs and of soils. REGULA-
TIONS.

Proposals were received for further subdivision of the Final Examination, particularly in the branch of organic chemistry, by making a separate branch of tinctorial chemistry. The Council, after careful consideration, came to the conclusion that the Institute's examinations being intended primarily to test the *general* qualifications of candidates, and specialisation in certain branches of applied chemistry having already been

1911.
REGULA-
TIONS.

admitted in several universities and technical colleges, it would be undesirable for the Institute to duplicate such work, or to take any steps which might tend to foster premature specialisation. The Council suggested that candidates who desired to be examined in special branches of industrial chemistry should present themselves for the examination in chemical technology, and stated that they would be prepared to accept tinctorial chemistry as a subject for that examination.

In 1911, in response to representations made by various Fellows and Associates of the Institute, the Council appointed a special committee to investigate and report on a suggestion that some form of academic costume should be sanctioned for the use of members of the Institute. After inviting the opinion of the Fellows and Associates on the matter, the Council came to the conclusion that no sufficient evidence had been brought forward to show that the adoption of the proposal would be advisable.

LECTURES

The new scheme of lectures was inaugurated at King's College, London, on October 26th, 1911, Professor Thomson presiding in the unavoidable absence of the President. After explaining the objects of the scheme, Professor Thomson said that, mainly owing to the high standard of scientific ability attained by chemists who devoted themselves to general and industrial practice, the relations between teachers of chemistry and other professional chemists had become closer in recent years. The Council thought it would be a good thing if students and the younger chemists could be brought into touch with those whose experience had revealed the directions for future advancement.

On this occasion, Mr. Bertram Blount delivered the first of two lectures on "Cement," the second being given on December 1st. They were followed by two lectures on "Cellulose," delivered by Mr. C. F. Cross, at University College, London, on January 26th and February 23rd, 1912.

The lecture scheme has since been in successful operation, the lectures being printed and issued to the members and registered students, thus forming a collection of monographs of interest and usefulness to the profession.

PROFES-
SIONAL
INTERESTS.

In 1911, the Council found it expedient to join with the Councils of other public bodies in presenting a petition to

His Majesty in Council against the granting of a Royal Charter to another institution on the ground that its objects did not appear to be clearly defined and might be prejudicial to the interests of professional chemists, and opposed to those set forth in the Royal Charter of the Institute of Chemistry. The Lords of the Privy Council subsequently replied that they had not found themselves able to recommend His Majesty to grant the Charter prayed for.

1911.

A dinner was held at the Hotel Metropole on October 27th, 1911, and was well attended. The Institute was honoured by the company of many distinguished guests, and a report of the speeches was published. Sir William Tilden, Past President, presided on this occasion.

Replying to the toast of the Institute, which had been proposed by Lord Justice Fletcher Moulton, Sir William Tilden said that he recollected the time when the Institute was founded, and the early years during which it was nursed under the care and vigilance of the first President, Sir Edward Frankland; he also remembered the times, a few years later, of great *Sturm und Drang*, when the internal convulsions of the Institute were so great that they threatened its disruption. Those times were happily past and for twenty years its work had progressed. The Institute had pursued a steadfast policy which was based upon the idea of exacting from every member of the Institute, and from every person who sought admission to the Institute, a very high standard of professional conduct and professional qualification. The Institute could say, like Othello, "I have done the State some service, and they know it." The State, public bodies, municipalities, and so forth, which formerly, twenty or five-and-twenty years earlier, did not pay very much attention to the proceedings of the Institute, looked to it to supply them with well-qualified men; men qualified personally by knowledge, skill and experience, as chemical advisers and chemical practitioners in every department. The fact that 96 per cent. of the appointments of public analysts were held by Fellows of the Institute of Chemistry was a strong testimony that the work of the Institute was being very generally recognised. The qualification the Institute demanded was of a double kind, for it was based upon training—a general education and a scientific education in a recognised institution, extending over several years—followed by very serious examinations of a practical character. The students who were taking the Institute examinations were required to go through a thoroughly good systematic course of instruction in chemistry and physics and allied branches of science, so that they might really claim, at the end of their training, to be called truly scientific men. The Institute had lately taken a new step with the same object in view, by introducing a system of lectures given during the winter months by experts in various technical subjects, which he was sure would prove very helpful to many of the younger chemists. The work of the Institute could not be accomplished without a suitable home, and the time was coming when, through force of circumstances over which the Council had no control, the Institute would be extruded

1911.

DINNER.

from its present premises and would have to seek a home elsewhere. It was the ambition of the Council to raise a building which should provide the accommodation necessary for carrying on its business, for carrying on its examinations, and for housing a library of which it possessed the nucleus. A considerable step had been made towards the realisation of this idea. The work which the Institute was doing, by providing throughout the country a body of well-qualified and well-tested men, helped to a certain extent to neutralise the effects of that indifference which was sometimes thought to be discerned in the attitude of the State towards science in this country. The spread throughout the country of a large body of educated chemists would serve to show, not only that science was useful and valuable in making original discoveries, affording subjects of interest to the world; but that it was of practical use in the everyday affairs of the life of the people.

Sir Archibald Geikie, then President of the Royal Society, speaking on the same occasion, referred to Bacon's "New Atlantis," and expressed his opinion that of all the societies that were then in operation the one that Bacon would look upon with most pleasure would be the Institute of Chemistry, because it carried out the combination of pure and applied science which was to his mind the very culmination of human endeavour in the conquest of Nature. He had been very much interested and delighted to see the immense scope of its work and the great part which the Institute had in raising the standard of chemical education. He wished the Institute "God speed," and as the ranks of the Royal Society included so many Fellows who were members of the Institute of Chemistry, he was assured that the Royal Society looked with the kindest feelings upon its progress. Its work was of enormous advantage to Science and to the country at large.

SOUTH
AFRICA.

Early in 1912, the Council received an intimation from Dr. John McCrae, Honorary Corresponding Secretary of the Institute at Johannesburg, of the formation of a society of analytical and metallurgical chemists, to establish and uphold the status of professional chemists in South Africa. Prior to the establishment of this society, the Council considered a proposal that the Institute should enrol, as "Licentiates," chemists of established position in South Africa. The Council decided not to adopt the suggestion; but they were prepared to encourage the examination of eligible candidates at South African centres and, so far as they were able, to support the new society in its endeavours on behalf of the profession.

PUBLIC
APPOINT-
MENTS.

At a meeting held on March 1st, 1912—before the annual general meeting—the Council had under consideration a report from the Public Appointments Committee with reference to three proposed appointments, the conditions of which appeared to be unsatisfactory. The Council determined to

issue to the Fellows and Associates a notice embodying the terms of the appointments, and expressing their views concerning them. The Council were of opinion that the remuneration and conditions offered were not compatible with the adequate and complete execution of the duties involved, and that it was contrary to the public interest that appointments should be made on the terms offered. The Council also stated that they viewed with disapproval the application for and acceptance of any of these appointments on the terms and conditions stated. They advised any member who had made application for any of these appointments to withdraw the same; and they advised members of the Institute to refrain from giving testimonials in support of any candidate applying for them.

1912.

At the thirty-fourth annual general meeting held immediately after the meeting of Council, the action of the Council was reported by the President and approved. An announcement with reference to these matters was published in the press, copies of the notice being sent to the local authorities concerned, and also to the Local Government Board, with the request that they would receive a deputation from the Institute before the appointments were confirmed. (See p. 251.)

THIRTY-
FOURTH
ANNUAL
GENERAL
MEETING.

At the same meeting, Dr. Beilby delivered his third address.

Speaking of the prospects of the profession of chemistry, he expressed his conviction that there was plenty of scope for chemists of the right stamp, particularly in educational and industrial work. The Institute had been able to secure appointments for many young members of the profession and, in some cases, it had been difficult to find candidates for appointments which offered quite fair commencing salaries and good prospects. Touching on the difficulties which confronted public analysts and private practitioners, he referred to the attempts of certain local authorities to lower the status of the professional chemist by offering appointments at ridiculous remuneration. The Institute had decided to take a somewhat drastic step by issuing a notice to Fellows and Associates advising them not to apply for such appointments. The more enlightened municipal bodies realised that the proper administration of important statutes, such as the Sale of Food and Drugs Act, could not be expected unless they succeeded in attracting to their appointments candidates of competence and integrity who could hold their own as responsible officers. The Act was as much a statute against fraud as in the interests of public health, and it should be clearly understood that the public analyst was in no way subject to the control of the medical officer of health. It was a false

1912.

THIRTY-
FOURTH
ANNUAL
GENERAL
MEETING.

notion that medical men were capable of controlling chemical laboratories: very few possessed a competent knowledge of chemistry in any one of its branches; it was astonishing to find Government authorities in some of our overseas dominions requiring doctors of medicine to supervise qualified professional chemists engaged in laboratories mainly devoted to the analysis of metals and ores.

Dr. Beilby alluded to important changes which were taking place in educational appointments, particularly the Chairs of Chemistry at the Royal College of Science, Dublin, Oxford University, and University College, London, indicating how men who had achieved great things were making way for the younger generation of chemists, to whom it fell to maintain the honour of the British School of Chemistry, to which their predecessors had contributed so much.

He congratulated the Institute on the successful inauguration of the new scheme of lectures.

Dr. Beilby also referred to a case in which the public analyst for a county had been obliged to seek an injunction to restrain the publication of an advertisement containing an unauthorised statement with regard to a certificate of analysis. This case showed how, in some cases, professional chemists might wrongfully be thought to be transgressing recognised etiquette. The defendants urged that other advertisements had appeared from time to time, containing statements by members of the Institute and that, therefore, the plaintiff could not say that he was damaged. It was clearly imposing a hardship on a Fellow who objected to the unauthorised use of his name, that his objections should be met by evidence that other professional men might approve of such publication, while an overwhelming majority of professional chemists strongly objected to the use of their names for such purposes.*

During Dr. Beilby's term of office as President (1909-1912) the Institute gained in strength and influence, and the Council felt that this advance had been in no small measure due to his interest and zeal.

* A somewhat similar case occurred in 1913, when a professional chemist applied for an injunction to restrain a limited company from publishing and circulating a statement, wholly unauthorised, purporting to represent his opinion on a food. The defendants submitted to a perpetual injunction and an inquiry as to damages, and agreed to pay the costs.



¶Lafayette, Ltd.

RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S.
President since 1912.

RAPHAEL MELDOLA : PRESIDENT, IN OFFICE

Prof. Raphael Meldola, of Finsbury Technical College, was elected President in succession to Dr. Beilby, having served as a member of Council and a Vice-President, and having already occupied the Presidential Chairs of the Chemical Society and the Society of Chemical Industry, a record only once previously attained, namely, by Sir Frederick Abel.

In the *Proceedings*, Part II., 1912, the position of the Institute in connection with the appointment of public analysts was reviewed. It was shown that the passing of the Sale of Food and Drugs Act, 1875, was one of the principal events which led to the foundation of the Institute. Under its Royal Charter, the Institute was entrusted with the specific duty of providing the community with a class of men qualified for the professional practice of chemistry, and in 1899 the Council of the Institute and the Local Government Board came to an agreement with regard to the lines on which should be conducted an examination especially adapted to the requirements of those who were desirous of practising as public analysts. In 1912, about 96 per cent. of the appointments were held by Fellows of the Institute. Thus, the Institute having fulfilled the duty imposed upon it, the Council claimed a right to approach local authorities concerned with the administration of the Acts dealing with adulteration.

Neither of the authorities concerned with the appointments referred to at the meeting held on March 1st decided to receive a deputation; but a statement of the views of the Council was forwarded in each case, and the matter was discussed to some extent in the public and the scientific press. As, however, candidates with the necessary qualifications were willing to accept the positions, the authorities proceeded with the appointments, which the Local Government Boards, after inquiry, subsequently confirmed. The Local Government Board for England and Wales informed the Council of

1912.
PUBLIC
ANALYSTS.

the Institute that they had been in communication with the authorities concerned, in two of these cases, and had found that the arrangements proposed were somewhat different from those which had appeared to be contemplated in the terms of the advertisements, and that the Board had been advised that the arrangements were satisfactory. The Council inquired what modifications of the original terms had been introduced to lead the Board to conclude that the arrangements were so different from those originally contemplated as to be considered satisfactory. The Board replied that they were not aware to what extent the Borough Councils might consider it desirable to disclose the details of the arrangements, and suggested that the Institute should address the Borough Councils on the subject. This was done, but no explanation was received.

CONFERENCE
ON PROFESSIONAL
REMUNERATION.

It was obviously desirable that Fellows and Associates should support the Council in their endeavours to maintain the status of professional chemists, and to secure proper recognition of the value of their services. The Council, therefore, decided that a Conference should be held on the question of the remuneration and conditions of public chemical appointments. The meeting was held at the Rooms of the Chemical Society on June 21st.

The Council hoped that this meeting would tend towards a better understanding among the members on the matter submitted for their consideration. Discussions were opened by Sir William Tilden, on professorial and teaching appointments; by Mr. Otto Hehner and Col. Charles E. Cassal, on appointments under the Sale of Food and Drugs Acts; and by Dr. John A. Voelcker, on agricultural appointments. The debate was not restricted to these sections, and any Fellow or Associate was at liberty to deal with the subject in its relations to any appointments of a public nature.

Sir William A. Tilden opened the proceedings by reading a statement which the President, Prof. Meldola, who was unable to attend, had prepared as the basis for his introductory remarks, and of which the following is an abstract :—

“ There had been in the past considerable divergence of opinion as to whether the Institute should take part in determining questions of this kind. Fellows and Associates were probably aware that the

General Medical Council had made no attempt to lay down, for the guidance of medical practitioners, any specific regulations with regard to fees for private practice; that in the profession of law, although there was a more definite indication of the prevailing practice, it was not rigidly adhered to; and that in other professions the members were much at liberty to adjust individually the value of their services. On this occasion, however, it was proposed that the Institute should consider the question of the remuneration and conditions of *public* chemical appointments as distinct from *private* practice, and it might be laid down as a fundamental principle that, in all public service, the aim of the administration should be to secure the most efficient service; it should, therefore, provide remuneration and conditions which would promote efficiency combined with integrity. The Institute comprised chemists engaged in all branches of public service. The 'List of Official Chemical Appointments' indicated the great variety of technical service which chemists rendered to the State: chemists attached to the great Government Departments and Municipal and other Authorities, and professors and teachers in Universities and Schools of science. Considered as a national asset, the value of this highly important professional service was very greatly under-estimated, and it was a grave administrative error that this state of affairs should be allowed to continue.

"The Institute did not exist for selfish ends: for thirty-five years it had endeavoured to carry out the duty of providing the community with competent chemists; in return, it had a right to expect that the public would have some regard to the fact that the Fellows and Associates were duly trained, qualified, and competent professional men. They should be held in respect, and their services should be rewarded consistently with the responsibility of their offices and the performance of honest and efficient work.

"Further, it might be taken as an axiom that every qualified chemist should, in his own interest, as well as in that of his professional brethren, use every endeavour to secure due recognition and adequate material reward. The President indicated the legitimate means of acquiring professional status and reputation: good work, *special* knowledge and skill, the publication of papers, the invention and improvement of processes, and a willingness to make some sacrifice in the interests of scientific social work."

Sir William Tilden said that the conference was held for the purpose of obtaining the views of the Fellows and Associates. The Council and the Public Appointments Committee would take these views into careful consideration, and endeavour to formulate some code for the future guidance of the members. It was hardly possible to confine the discussion strictly to *public* appointments, because the question was to a certain extent influenced by the feeling which prevailed throughout the community on these matters.

Dealing with professional and teaching appointments, he took into consideration the course of education ordinarily required to equip a chemist for his profession. He was required to be not only conversant with his subject, but a well-educated and cultivated man.

Sir William Tilden sketched briefly the training required by the

Institute and the expense involved. The whole course was an expensive one, comparable with that leading to the profession of medicine, or engineering, or architecture, etc., in all of which, for the man of ability, there was a future which contained many prizes. The man of ability *only* should be encouraged to take up chemistry; but to what could he look forward? Suppose he entered the teaching profession as a chemist only (not as a schoolmaster), he could begin with a Junior Demonstratorship in a college, and might ultimately reach a Professorship. The professors whose stipends were £1,000 and upwards numbered about half-a-dozen, consequently the chances were small. He might become a teacher in a technical school and there rise in time to be the Head of a department, with, perhaps, £400 or £500 a year; or he might take to teaching general science in a secondary school. Only one here and there was strong enough physically to emerge from the exhausting burden of routine in a fit condition to follow purely scientific work.

The great defect in the teaching career, for the chemist, was not so much the small remuneration offered at the outset, but the poverty of the outlook. The consequence was that many became disheartened, earning precarious additions to their small official incomes by examination and literary work, unless they threw it up at the first opportunity of escape.

There were many large educational institutions in which scientific staffs were employed. Too often the governors ignored the cost and labour involved in the education of their junior teachers; and the lectureships and senior posts to which members of the staff ought to be able to look forward were both too few and too unsatisfactory to be worth waiting for. The number of appointments should be increased and they should be improved with regard to remuneration.

In industries the really capable chemist was usually paid on a more liberal scale than formerly; but employers often had no definite views as to the value of the service they expected to get.

There was too frequently an idea that a young chemist should be engaged on the same scale of pay as the junior clerks in the office. American and German manufacturers appeared to be, in many cases, more reasonable as to the prospects they offered; assistants frequently started on better terms and were not expected to produce an immediate revolution; they were given agreements covering a term of years, and men of ability had a more definite outlook for the future.

Mr. Otto Hehner placed his experience of appointments under the Sale of Food and Drugs Acts at the disposal of the younger members.

Since the Institute was founded, public discussion on fees had been avoided because the subject was beset with very great difficulties. The object of the Institute was the raising of the status of its Fellows, mainly in the direction of rendering them highly trained and efficient and of obtaining for them the recognition of Government and the public; but the question of securing an adequate income could not be dissociated from that higher aim.

The fee of 10s. 6d. per sample which had become somewhat general was not regarded by the legislature as adequate in 1875. The chemistry of food had gradually come into being; the public analysts had evolved their own methods of analysis. When the Act of 1875 was passed, so many appointments were created that there was not a sufficient number of chemists to fill them, and a good many persons were appointed who

were not qualified to carry out the work. The chemists therefore founded the Institute, and a vigorous profession has since come into existence.

Mr. Hehner gave examples of the advancement made in the chemistry of food and drugs ; with that advancement the work of public analysts had necessarily increased ; but the fees were, on the whole, lower than they were in 1875. If assistants were properly remunerated, a fee of 15s. per sample would be a fair and reasonable one. Qualified assistants should have a prospect of reaching at least £300 per annum. While the expenses of living were steadily increasing, and the wages of labourers were rising, there was a tendency for the remuneration of public analysts to become less. The fees accepted were often quite inadequate : in some cases, so contemptibly inadequate that they could not possibly cover a proper performance of the work. These undoubtedly tended to reflect injuriously upon all analysts. Members should consider, when accepting appointments, not only their own momentary interests, but the wider and more permanent interests. The Institute should use its best endeavours to secure that, for public work at least, adequate fees should be paid. Unfortunately, the Local Government Board had deliberately declined to interfere with the question of remuneration. In conclusion, he urged the necessity for loyal co-operation among the Fellows in insisting upon adequate payment for public work.

Colonel Cassal supported most of Mr. Hehner's remarks on the appointments of Public Analysts,

The authorities charged with the duty of appointing public analysts were, with rare exceptions, largely composed of persons who had no knowledge of the qualifications which should be possessed by persons to be appointed to fill scientific positions, or of the payments which should be made to such persons for their work. The attitude of the Local Government Boards was that they had nothing to do with the question of remuneration of public analysts, and that it was solely a matter of mutual agreement between the local authority and the officer appointed. The only circumstances under which the Local Government Boards could interfere in that connection were when a local authority called for the resignation of the public analyst, or called upon him to accept a lower remuneration. In such a case, supposing the public analyst to have refused to resign or to accept the proposed reduction in his remuneration, the next step would be for the local authority to apply to the Local Government Board to sanction his dismissal. The Local Government Boards could, if they choose, refuse to sanction the dismissal except on adequate grounds, and in several flagrant cases during the past twenty-five years the dismissal of public analysts on inadequate or improper grounds had been prevented by the action of the Boards. The Council of the Institute had obtained the opinion of eminent counsel, especially conversant with local government questions, to the effect that the Local Government Boards had, if they chose to exercise it, the power to refuse to sanction the appointment of a public analyst if the remuneration or the conditions were not, in their opinion, adequate or satisfactory for the proper carrying out of the work. If the Local Government Boards did not possess that power in law, the sooner they sought to possess it the better. The Boards already possessed such powers to some extent with regard to Medical Officers of Health. If the remuneration for the work carried out under the Sale of Food and Drugs Acts was inadequate, the public

1912.
 ———
 CONFERENCE.

interest must suffer ; and if the work could not be done as efficiently as it ought to be done in the interests of the public, the Local Government Boards were failing in their duty to the public by not exercising their powers or by refraining from obtaining the necessary powers, if this were legally essential.

Colonel Cassal indicated the importance and responsibility of work of the public analyst, who, he said, should be a man both of the highest skill and of the highest personal character. He expressed his opinion that the Institute had not insisted with sufficient determination on getting what was really required. He advocated the boycotting of appointments of a certain type and, failing the consent of the Boards to receive deputations, those departments should be required to supply answers to a succession of questions in Parliament.

Dr. John A. Voelcker dealt with agricultural appointments, and, after referring to appointments with the agricultural societies and in agricultural colleges, considered those of the official analysts under the Fertilisers and Feeding Stuffs Act.

The Act had undoubtedly been of benefit to the agricultural public, and *might have been* also of benefit to the agricultural chemist ; but its effect, in reducing the number of analyses made for members of agricultural societies, had been most unsatisfactory, while the evils experienced in appointments under the Sale of Food and Drugs Act had been reproduced with interest : the tendering for appointments, the submission to the demands of local authorities, the readiness to comply with requests lying outside the proper administration of the Act, all had their share in producing a deplorable position.

The work done under the Fertilisers and Feeding Stuffs Act was of a *public* nature, in which commercial interests were concerned : work on which legal action depended and criminal procedure might result. The analyst's work should be judged from the standpoint of whether it was fairly remunerated, and whether a man was getting a proper return for his knowledge, skill, and experience. To assume, as some had unfortunately done, that an appointment might be a "stepping-stone" to other work was, in the case of a public appointment, an entirely wrong view to take, and one of which local authorities were not slow to avail themselves. The varying extent to which local authorities made use of the Act added to the complications attaching to the holding of these appointments, for, while there was no direct obligation on them to send samples, and several, indeed, never sent any at all, others exhibited spasmodic outbursts of activity and as often relapsed into inactivity. This uncertainty made it the harder for the analyst to decide what was a fair remuneration to ask. It was well to fix a minimum retaining fee, so that, in the case of the Act not being worked, the local authority at least should not have the use of the analyst's name, and give formal compliance to the Act, without having something to pay for the privilege. Where the Act was worked, the question of remuneration was a difficult one, as it depended largely upon the number and the kind of analyses carried out. Where formal samples, involving detailed analyses and possibly legal action, were concerned, the fee should be at least one guinea per sample.

In conclusion, Dr. Voelcker referred to a number of questions concerning the administration of the Fertilisers and Feeding Stuffs Act, urging that it should be in charge of those who have the requisite and special knowledge, and that the appointments under the Act should

not necessarily be the prerogative of the public analysts, whether they had agricultural experience or not.

1912.

In the discussion which followed, Mr. G. H. Gemmell, President of the Association of Public Analysts of Scotland, and Mr. G. D. Macdougald represented the views of the Association with reference to public analytical appointments in Scotland; Mr. R. F. Blake spoke on the position of public analysis in Ireland; Professor W. Popplewell Bloxam and Mr. J. Hart-Smith referred to teaching appointments; and Professor M. O. Forster, Dr. G. J. Fowler and others spoke on the general question. There appeared to be a general consensus of opinion that some agreement with regard to the remuneration of professional chemists in various branches of work was desirable, and several members expressed the hope that the Council would consider the possibility of formulating a schedule as the basis of such an agreement.

A report of the conference was issued to Fellows and Associates, and the views expressed and suggestions advanced by the various speakers were referred to the consideration of the Public Appointments Committee, who endorsed the view that some agreement should, if possible, be arrived at with regard to fees charged for analytical work. The Council, therefore, requested them to act as a special committee (with power to add to their number) to prepare a schedule of reasonable and adequate fees. (See p. 275.)

The alterations which were introduced in the Regulations, in 1912, were mainly of an elucidatory character, and did not materially affect the principles on which candidates had hitherto been admitted to the Institute. The aims of the Institute were more fully set forth by the inclusion of abstracts from the Royal Charter, and the requirements in the Preliminary Examinations were made more explicit. The syllabus of the Final Examination in Organic Chemistry received the consideration of a special committee, and was revised to include "the preparation, examination, analysis, and detailed investigation of organic materials generally, including commercial products."

REGULA-
TIONS

At the same time, it was specifically stated that in all branches of the Final Examination candidates would be

1912

examined orally as to their general knowledge of chemistry : this was an essential part of the examination, in which candidates were expected to do well.

THE ROYAL
SOCIETY.

The Council received an invitation to appoint a delegate to attend the celebration of the 250th anniversary of the incorporation of the Royal Society, in July, 1913, and appointed the President to represent the Institute on this occasion and to present an address of congratulation on behalf of the Fellows and Associates. In the address it was stated that the Institute desired to be associated with academies, learned societies, and scientific institutions in rejoicing that the Royal Society—the parent of the scientific societies—had with such marked success upheld the world-wide prestige of science generally, and that throughout the two-and-a-half centuries of its existence the great objects of its founders had been faithfully maintained, to the honour of this country and to the everlasting benefit of the cause of civilisation and humanity. In the domain of chemistry, no less than in other branches of science, the Society had fostered the progress of learning and research. Since the foundation of the Institute in 1877, its Register had borne the names of no less than 106 Fellows of the Royal Society, while at that time forty-eight Fellows of the Institute enjoyed that distinction.

BUILDINGS
FUND.

In *Proceedings*, Part III., 1912, the Council were able to report that the Buildings Fund had made substantial progress, and expressed the hope that they would be soon in a position to negotiate for a site for the new buildings. The total contributions promised then amounted to over £9,400, not including a sum of over £350 received from dividends and interest, while nearly £6,750 had actually been received. Until the financial position had become reasonably secure, the Council could take no definite step to acquire the site which they had hitherto had in view; but they now learned that it had been included in the larger site on which the Commissioners of the University of London had an option. There were, however, other sites available which might prove equally suitable, and a special committee was appointed to report on the matter. Shortly after, the Council were in a position to claim a donation of £250 which had been

promised by a Fellow, conditionally on the total reaching £10,000 before the preparation of the plans.

The Sites Committee considered many available plots, and had almost arrived at a decision, when in July the site in Russell Square,* at the corner of Keppel Street, which had been originally in view, was again offered to the Institute. The Council were thus enabled to submit a definite scheme for consideration at an Extraordinary General Meeting held on November 14th, whereat resolutions were passed empowering the Council to secure the site and to apply the Buildings Fund to the erection and equipment of new buildings for the Institute. The notices convening the meeting contained a plan and particulars of the site, with a map of the surrounding district and a report on the progress of the Fund.

The President said that the Fellows and Associates realised that they were about to take a very important step, in that they were met for the purpose of deciding on the erection of headquarters of the Institute for practically one hundred years, and in so doing they would, to a considerable extent, be determining its future policy. During the twenty years—1893–1912—the Institute's work had been conducted on a very economical basis; few institutions of similar character had occupied good working premises at such a low rental; the premises had served their purpose very well and had enabled the Institute to maintain a more independent position than it did in its early history. The Council were grateful to all Fellows, Associates and friends who had so generously helped the Institute in raising the Fund. They had done a good thing, not only for chemists of the present day, but for those who would carry on their work hereafter. Most of the outlay involved had been supplied, and, with an effort, there should not be great difficulty in raising the remainder. The funds received for this purpose being "Funds of the Institute" within the meaning of the

* Russell Square, which is about three times the area of Bloomsbury Square, was formed in the early part of the 19th century on what had been known in 1720 as Southampton Fields and later the Long Fields. On these fields, in 1801, a body of upwards of 1,000 volunteers, denominated "The Loyal British Artificers," were regularly mustered for exercise, in expectation of possible invasion by Buonaparte. It became "a favourite residence of the highest legal characters; and here merchants and bankers have seated themselves and families, the air and situation uniting to render it a pleasant retreat from the cares of business."—Rowland Dobie (1829).

Thackeray, in *Vanity Fair*, has also much to say about Russell Square in the early part of the nineteenth century.

Among the former occupiers of 30, Russell Square, may be mentioned Henry Crabb Robinson, Barrister at-law and Author, who lived there from 1839 to 1867, occupying at first only part of the building, the first floor being occupied by Sir Charles Fellows, a well-known traveller and archaeologist. Crabb Robinson occupied the whole house from 1864 until his death in 1867.—"The History of the Squares of London," E. Beresford Chancellor (1907).

1912.
—
BUILDINGS
FUND.

Charter, it had been necessary to call a special meeting to authorise the Council to proceed with this matter.

With the move which the Institute was about to make, some additional expense would be incurred; but if the Institute continued to progress as it had done, there would be no reason to anticipate any difficulty when the building was completed.

The decision of the Sites Committee was unanimous, and their recommendation was received by the joint meeting of the Council and Special Finance Committee with unanimous approval. They were advised that the terms were reasonable, and that the area of the site was adequate for the present requirements and allowed for possible future development. A good, useful building would be erected, providing ample accommodation for offices, meeting rooms, and library, and better equipped and more convenient laboratories. With regard to the laboratories, it was not proposed to provide benches for more than the number of candidates hitherto examined at a time. One of the main features of the examinations of the Institute was to require the Examiners, as much as possible, to become personally acquainted with the Candidates and their capabilities. The practice of examining only twenty-five candidates at a time would, therefore, be continued; if necessary, the Council would appoint additional examiners to act by rota, and extend the practice of holding examinations at local centres under competent supervision.

The Council had secured the services of Dr.—now Sir—John J. Burnet, F.R.I.B.A., whose work in connection with the extension of the British Museum was nearing completion, as architect for the new buildings. The Fellows and Associates might look forward to the completion of a work which would meet with their general approbation. With such headquarters, the Institute might look to the future with a sense of greater stability, and continue in its sphere of usefulness to the advancement of the profession of Chemistry and for the public good. If all went well, the building would be started in the following year.

The President formally moved :—

“(i.) That the Council be empowered to acquire from the Bedford Estate the site of 30, Russell Square, London, W.C., for a term of 99 years, at a ground rent not exceeding £300 (three hundred pounds) per annum, one year at peppercorn rent.”

“(ii.) That the Council be empowered to apply the Buildings Fund of the Institute and all future contributions to the Buildings Fund, and all dividends and interest thereon, in the erection and equipment, on the site of 30, Russell Square, of buildings for the use of the Institute, and in the payment of all expenses to be incurred in the acquisition of the said site, and the erection and equipment of such buildings.”

Mr. A. Gordon Salamon, Honorary Treasurer, in supporting the motions, said that it only remained for him to assure the Fellows and Associates that the present proposal of the Council was financially sound. At the same time, he was obliged to utter a note of caution, for the margin of income over expenditure, in the new premises, was

likely to be narrow for some time, and would not allow of any extravagance. He reminded the Fellows and Associates that the redemption policies, on the purchase price of the present lease and on the cost of the laboratories erected in 1893—representing £3,755, would fall due in 1914; when not only would the Institute be saved the amount of the annual premiums, but further income would be derived from the investment of the capital of the redemption funds. Some might contend that, for the purpose of the new buildings, the Institute should draw on the proceeds of the policies and on the reserve invested capital, in all about £7,000; but, without the revenue from this reserve, the Council could not see clearly ahead, except by raising the annual subscription. The step the Institute was about to take was not for a short period; it would be taken with full regard to the future of the Institute, and there was no doubt that the Institute would be in a sound position when once the difficulties which might arise in the first few years had been overcome. Mr. Salamon endorsed the President's remarks as to how much the Council were indebted to the Fellows and Associates and other contributors for their very generous response to the appeal, and expressed the hope that Fellows would do all they could to secure the remainder yet required to complete the Fund. Considering that only a very limited number of manufacturing firms and companies had been asked for support, he thought the full amount would be raised successfully.

Sir William Tilden recalled the circumstances under which the premises in Bloomsbury Square had been acquired: at that time, it was thought to be a very hazardous proceeding and one which might involve the Institute in difficulties. If difficulties had arisen, they had been successfully surmounted, and there was every reason to hope that when the step now proposed was made the Institute would profit by the courage which animated the Council in proposing it. With the exercise of reasonable economy, the Institute would continue to prosper, and its position in the eyes of the public would become more and more enhanced. The site was a most suitable one; it was close to the new entrance to the British Museum, and there was no doubt that a considerable number of new buildings of importance would arise in the neighbourhood, which was rapidly improving.

Mr. David Howard said he felt confident that events would justify the Institute taking this step. He hoped that the Fellows and Associates would do all in their power to raise the remainder of the fund. He was convinced that when the Members of the Institute reflected, and realised what the Institute had done for the profession of chemistry, they would feel that it was well worthy of their utmost support. The scheme, had been wisely and carefully thought out, and he heartily commended it to the members.

Mr. Otto Hehner said that he was sure the Fellows were satisfied that the Council had come to the best practicable decision. The future of the Institute was secure, judging by its development and the services it had rendered to the chemical profession in the past. Mainly by its efforts, the profession had been recognised by the State and the public, and there could be no doubt that, with the growing importance of chemistry in national development, chemists possessing the Institute's qualifications would steadily rise in influence. He trusted that the meeting would accept the Council's choice, and that in its new home the Institute would continue to develop and flourish.

Dr. J. J. Dobbie and Dr. George McGowan having spoken also in support of the resolutions, they were put to the meeting and carried unanimously.

1912.
BUILDINGS
FUND.

About two years of the lease of 30, Bloomsbury Square, then remained, during which the plans could be prepared and the building completed. Appeals were addressed to companies, firms and others interested in the progress of science and its applications, and the Council urged every member who had not as yet responded to forward a subscription, or promise a contribution, spreading this, if more convenient, over a term of two or three years. Many of those who had already helped further increased their donations. Copies of the list of contributors were prepared and supplied to Fellows and Associates, who were in a position to bring the Fund to the notice of firms and individuals likely to be interested in the work of the Institute and to assist in securing suitable headquarters for the furtherance of its work. (See p. 270.)

ROYAL COM-
MISSION ON
THE CIVIL
SERVICE.

In April, 1912, the Royal Commission on the Civil Service published a statement to the effect that evidence would be taken from associations, societies, and organisations representing classes common to the whole Civil Service, and the Commission would receive from any officer serving in, or retired from, the public service, written statements on any matters which concerned the organisation or administration of a particular department; further, that the Commission proposed to consider applications to tender evidence by persons not connected with the public service.

In view of this announcement, the Public Appointments Committee had under consideration the conditions attaching to chemical appointments under the Civil Service, and found in some instances that the status of chemists employed was far from satisfactory. The Council, therefore, acting on the advice of the Committee, applied to be allowed to submit their views on the matter, and were invited by the Royal Commission to forward a statement for their consideration.

A memorandum—a brief abstract of which is here given—was prepared and submitted.

The Council held that the importance to the country of the technical service rendered by consulting and analytical chemists in the Civil Service was generally under-estimated; that the remuneration and conditions of service were not such as to attract and retain permanently the most efficient chemists for the public service; and that chemists in Government Departments should have a recognised status as professional men. Official chemists holding very responsible positions did

nor receive salaries commensurate with the incomes of leading private practitioners in consulting chemistry, or comparable with those attaching to many other appointments which involved professional technical training.

Particular reference was made to the unsatisfactory conditions of service under the War Office. The Council supported the representations which had been made by the chemical staff of the Chief Inspector, Woolwich (formerly the Department of the War Department Chemist), in which it was shown that future, compared with previous conditions, involved loss of status, reduction of pay of all grades, and loss of prospects of promotion. The nature of the work was such that it required chemists of the highest training, but the conditions were inadequate to secure a continued supply of professional men of the requisite standing. It was a serious matter that positions of importance, such as that corresponding to the position of War Department Chemist, which had been previously held by distinguished chemists, should be abolished and the corresponding offices filled by military officers who, making no claim to the possession of special knowledge and experience in chemistry, were now placed in control of scientific departments. Such officers found themselves unable to rely on their own knowledge for scientific information, and were obliged, therefore, to refer to men under them who had been technically trained for their profession, who had devoted their lives to the problems of their department of work, and who had to bear the actual responsibility for the work. An injustice was done when higher offices, to which the units in a department had every reason to aspire, were thus abolished, and when men were called upon to take additional responsibilities and duties without promotion or improved remuneration. The abolition of higher appointments rendered the service less attractive to men of the best type.

Much of the work of the department was of the nature of "research," and included investigations of a very high order, many of which it would be dangerous to entrust to inexperienced chemists. Apart from any consideration of the interests of the existing staff, the Council of the Institute regarded it as a matter of *vital national importance* that the chemical staff of the Chief Inspector, Woolwich, should be efficient, and should be controlled by a chemist of the highest efficiency. Reference was also made to the conditions attaching to chemical appointments in the Royal Gunpowder Factory, Waltham Abbey.

The number of chemists connected with the War Department was so small that a substantial improvement in the conditions of the appointments could be effected without serious cost to the Government; while with improved prospects the positions would be more sought after and the status of the chemical staff would be maintained at a higher level.

In other matters of less importance the attitude of Government Departments towards scientific officers afforded similar evidence indicating lack of appreciation of scientific work. Subsidiary departments appeared to appoint chemists to meet the exigencies of the service, without any specific sanction for creating chemical sub-departments, with the result that they generally secured the services of young men who were seeking opportunities for gaining experience. In the event of there being no margin in the Treasury allowances for the maintenance and upkeep of laboratories, etc., the chemists had to be content with makeshift designations, and were treated in some cases as if they belonged to the non-professional class. The Council, therefore, feeling that professional technical services of this character should be systematised, suggested that greater efficiency would be secured if the

1912.

ROYAL COM-
MISSION ON
THE CIVIL
SERVICE.

chemical work of minor departments were brought under the control of the properly organised Government Chemical Departments.

The Royal Commission invited the Council to appoint representatives to supplement the memorandum by oral evidence, which was taken at the Royal Commissions House, Westminster, on January 10th, 1913. The representatives—Sir William Tilden and Sir William Ramsay—explained that the Institute was concerned with the interests of chemists occupied in the study and applications of the science of chemistry as distinct from pharmacy. They explained the duties entrusted to the Institute by Royal Charter, and dealt with the nature of the training and examinations required of candidates for the Associateship and Fellowship.

The bulk of the evidence related to the conditions of service of the chemical staff in the Department of the Chief Inspector, Woolwich. About twenty years earlier the remuneration of the highest chemical appointment in the Department was £1,200 at least; but the appointment of War Department Chemist had since been abolished; the Chief Inspector now was a military officer, and the salary of the highest chemical appointment, that of Chemist Class I., would, in future, be only £360 to £450, the junior appointments being correspondingly graded down. Previous holders of the appointment of War Department Chemist had been promoted from the staff and had received a salary of £650; junior members had entered the service with far better prospects than would be possible under the new regulations. The conditions of appointment of temporary assistants were very unsatisfactory, and could only be suitable for those who were seeking experience which would enable them to take better positions elsewhere, the time occupied by the senior staff in instructing them in their work being to a great extent wasted so far as the Department was concerned.

The Council were not so much concerned with the interests of particular individuals, but deemed it highly desirable that the prospects of official chemical appointments should be such that the universities and the Institute would be justified in recommending chemists of suitable type to become candidates for such appointments. Though the chemists at present employed gave every satisfaction, it was highly probable that

the changing conditions of service would seriously affect the problem of securing properly qualified assistants in future.

1913.

The Chairman of the Royal Commission summed up the main points as follows :—

“ Firstly, there is the personal point regarding the men already in these War Office appointments. There the gravamen of the charge is that when they entered the service they did so on the understanding that they had the prospect of promotion up to £650 a year ; but this organisation has restricted their prospects of promotion to the class in which they happened to be at the time.

“ The second point is, you consider that this scale of pay is inadequate to secure the men that are required.

“ Then you went on to point out how the interests of the public service suffer by recruiting inefficient people who are not properly educated in chemistry, and that that would be the result of a scale of pay such as this.”

The Minutes of Evidence were subsequently published by the Government, with Appendices, including the memorandum forwarded by the Council, and the Fourth Report of the Commissioners was published early in 1914.

Reference was made in the *Proceedings*, Part IV., 1912, to the arrangements made by the Home Office whereby, under a new Coal Mines Act, the examination of the air in coal mines would be entrusted to assistants in colleges. The Council of the Institute addressed a letter to the Secretary of State expressing the view that it was highly inexpedient that this work should be an adjunct to the duties of teachers in educational institutions ; they deplored the tendency of Government Departments to utilise State-aided educational institutions for professional purposes ; and indicated that, by the transference of such work to colleges, professional scientific chemists in colliery districts would be deprived of practice for which many of them were signally qualified by long experience.

The Home Secretary, in reply, stated that the arrangements made for the examination of coal-mine air had been carefully considered ; he regarded it as essential that the analyses should be made by some public authority, whose reports would be accepted as independent and authoritative ; and it was considered desirable to secure the co-operation of public educational institutions in several mining districts. The work was of a public and not of a commercial character, and it

1913.
THE COAL
MINES ACT.

appeared to him that it would support rather than interfere with the educational work of the institutions.

The authorities of at least one important college declined to undertake the work, but in another case an assistant was specially appointed for it. Eventually, as the Council understood that it was to be of an official character and would not include routine testing for colliery owners, further action in the matter was deferred.

LECTURES.

During the Session 1913-1914, Lectures were delivered by Mr. Edmund White on "Thorium and its Compounds," Mr. W. J. A. Butterfield on "Chemistry in Gas Works," and Mr. C. A. Hill on "The Function and Scope of the Chemist in a Pharmaceutical Works." The meetings were well attended on each occasion, and the lectures were subsequently published.

PUBLIC
ANALYSTS.

Arising out of the representations made to local authorities and Government Departments with regard to the appointment of public analysts, the Council published a further statement in the Annual Report, 1912-1913. They wished to make it clear to the Fellows and Associates that the previous Council, in expressing their opinions on the terms of proposed appointments and on the inadvisability of members becoming candidates for them, were following the example set by other professional bodies—for instance, by the British Medical Association and by the Royal Institute of British Architects. The notices issued in March, 1912, were intended to serve as a protest against the proceedings of the authorities concerned, and to appeal for the support of the members of the Institute; not to veil a threat of possible expulsion or suspension. Legal opinion was taken on a number of questions raised in this connection, the Council being advised, in particular, not to attempt to curtail the liberty of individual members with regard to the acceptance of appointments. Full information on the opinion was given in the Report, and the Council pointed out that, unless the members co-operated loyally, the interests of the whole profession would suffer.

THIRTY-
FIFTH
ANNUAL
GENERAL
MEETING.

At the thirty-fifth Annual General Meeting, held on March 3rd, 1913, these matters were discussed at some length, a number of Fellows expressing the view that the publication

of the opinion of counsel was injudicious ; but it was shown, on the other hand, that the Council intended to make their position in the matter quite definite, so as to remove any cause for misunderstanding.

1913.
—

Prof. Meldola delivered his first presidential address.

PROF.
MELDOLA'S
ADDRESS.

He welcomed an opportunity, he said, of making confession of a change of view concerning the functions of the Institute. He happened to be a survivor from the period when the agitation in the chemical profession resulted in the organisation of the Institute. At that time, in common with many of his contemporaries, he regarded the new movement, if not with actual disfavour, certainly with indifference. It was held by many that there would be no scope for such a body, and that no justification could be found for the creation of another corporation of chemists. It was with especial pleasure, therefore, that he was able to make amends for that error of judgment and to declare that the more he had seen of the work of the Institute the more strongly had he become convinced that it had a public mission to fulfil of precisely the same order of importance as that discharged by other bodies of professional men who served the community in various capacities.

The applications of chemistry in every field of human activity had steadily increased, and the importance of the profession to the public welfare had become more and more recognised. If the profession had not secured that full measure of public recognition to which it was entitled, Fellows and Associates should bear in mind that in this country all scientific affairs moved but slowly. The unscientific atmosphere in which the average Englishman lived and moved was responsible for the apathy towards science which was a national characteristic. In this respect chemists were no worse off than the practitioners in other departments of science ; in some respects, perhaps, they were better off, because the final outcome of their work could very frequently be expressed in that tangibly practical form which was capable of being gauged by the narrow standard of immediate and obvious utility. The consolidation and the elevation of the profession lay in their own hands, and the status which the chemical practitioner should occupy in the public estimation was bound to become more and more determined in the future by the standard of efficiency and of conduct set up by the Fellows and Associates.

The President then referred to the negotiations for the acquisition of the site for the new buildings and to the progress of the Buildings Fund, acknowledging the services of those who had helped to raise the Fund and mentioning the names of many generous donors. In view of the circumstance that the Council had appealed for public support, the time seemed opportune for submitting to a wider public a record of the influence of the Institute as a professional organisation, which bore testimony to the increasing recognition of the services rendered to the community by the chemist as a scientific practitioner. He instanced the formal recognition accorded the Institute by Government Departments at home, in British Dominions generally, and in India, maintaining that the Institute might fairly claim to have taken its place as an Imperial organisation, and therefore had every right to invite all who were in any way dependent upon or indebted to chemical science for industrial or professional success or for improved sanitation, in the broadest sense, to participate in the scheme for the establishment of headquarters befitting the prestige of the profession.

H.I.C.

S

1913.

PROF.
MELDOLA'S
ADDRESS.

He held it as an ideal that the name of every British chemist holding any position of responsibility, whether in the public service, in the teaching profession, in a chemical factory, or as a private practitioner, should in time be found on the Register of the Institute; and that the appearance of a name on that Register should be a necessary public guarantee of efficiency in the same sense that a name on the Medical Register entitled the medical man to practice. It might be long before the whole of this ideal was reached; but the general movement was assuredly in the required direction. This view was based upon the steadily growing recognition of the desirability of possessing our qualifications on the part of the present generation of students who would in the future form the ranks of the profession of chemistry.

Dealing more fully with the subject of the recognition of the Institute, he said there were two distinct questions involved—the recognition of the status of the services of the Institute as a collective body, and the public recognition of the services of the chemical practitioner as an individual. On the first point, steady progress had been and was being made; while the qualifications of the latter stood at a distinctly higher level in the public estimation than at any former period. With respect to the value set upon the work of the individual chemist, it should be borne in mind that in the case of the private practitioner and consultant, the teacher and the chemical technologist, the value of the services rendered, as measured by the scale of remuneration, was very much a matter of individuality, dependent upon three factors, viz., the place where the work was done, the value of the work to the employer, and the professional status and personal character of the employee. These factors were dependently or independently variable; so variable that it would be as impossible to standardise the value of any particular member of the Institute as it would be to enforce a particular scale of remuneration for each individual member of any other professional body. Possibly, in the case of some of the more routine classes of analyses, such as many of those conducted under the Sale of Food and Drugs Acts and the Fertilisers and Feeding Stuffs Act, it might be found possible to draw up some schedule representative of what was considered adequate remuneration. The conference, held in June, 1912, had led to the appointment of a Committee which was engaged in this task, and their Report, when issued, should, at any rate, serve as a useful guide to the members in dealing with private clients or public bodies.

It was clear from counsel's opinion that the Institute had no power to enforce any scale of fees. The solicitors' scale was permissive; and the courts were not bound to recognise any scale adopted by the representative body of any profession, while evidence to the effect that any scale was usual was not necessarily binding on a jury. Although it might be impossible for the Institute to lay down compulsory regulations with respect to fees, there should be a sufficient general understanding among the members to enable them to make it distinctly known that the value of the services rendered to the community by professional chemists in every department of their work was very much under-estimated. It was only necessary to look at the advertisements for public analysts, for teachers of the science, or for chemists in some of the Government Departments, to find justification for the statement that this valuation was deplorably low. Until the whole level of public appreciation of the value of the profession was raised—and the President hoped that the Institute would always keep this object in view as a fixed policy—the country was destined to lose the services of the highest type

of cultured and trained chemist, of which other nations were more wisely availing themselves.

The Institute had been invited to submit a statement and permitted to send representatives to give evidence concerning chemists in the Government employment before the Royal Commission on the Civil Service. The statement was prepared by a Committee and adopted by the Council after the most prolonged and serious deliberations, and it was most earnestly hoped that some practical amelioration in the existing state of affairs would result. A very important step in the desired direction would be made if the Commissioners could see their way to adopt at least one of the recommendations made in the statement, viz., that all the Government Chemical Departments should be under the control of chemists. The position of many of the chemists who had entered the public service was such as to place them at a disadvantage as compared with employees in other and less responsible positions, where the standard of general education and of special training was inferior to that required for the chemical profession. These conditions no doubt resulted from official and administrative influences which also reflected the national apathy towards science.

The President concluded his address with some considerations on the relationship of the qualifications of the Institute to those granted by educational institutions. He advocated a policy of expansion, so that, without in the least degree lowering the standard, the Institute might approach more closely to the ideal which he had set up earlier in his address. According to the Charter, the Institute was primarily founded for the "Profession of Analytical and Consulting Chemistry." Liberally interpreted, that definition covered the whole field of activity which brings the practising chemist into contact with the public. In the petition for the Royal Charter one of the principal claims for the recognition of the Institute was that it "comprised nearly all the Professors and Teachers of Theoretical and Applied Chemistry and the leading Analysts in the United Kingdom of Great Britain and Ireland, together with the Chemical advisers of various departments of our Government." Seeing that the membership was accepted as a public guarantee of efficiency, it followed that the training of future members should be entrusted to those who had themselves the necessary qualifications. That principle should bring into the ranks of the Institute the whole body of teachers of chemistry who had qualified according to the standard of the Institute. This condition might be regarded as virtually met by the appearance on our Register of the names of practically all the leading teachers of chemistry in the universities, university colleges, technical colleges and schools, and polytechnics. The question arose whether the teaching profession should not be invited to come more formally into line with the Institute by giving official recognition to the qualifications of the Institute—not only for those of their students who were in training for consulting and analytical work, or as technologists, but also for those who were to have the future training of analysts, consultants and technologists, *i.e.*, the prospective teachers themselves.

As an officially recognised power and as a public organisation, the Institute had perforce to be reckoned with, in connection with public chemical appointments; but the notion entertained by some teachers that the Institute existed mainly as a qualifying body for public analysts, or for private practitioners, required very considerable expansion, in view of the continuous intrusion of chemical science, and its application into so many branches of national activity. It was desirable, therefore, in the best interests of the chemical

1913.

PROF.
MELDOLA'S
ADDRESS.

profession, in its broadest sense, that, in an understanding with the teaching profession, the Institute should arrive at some concordant scheme of joint action which would be helpful alike to the educational institutions and to the cause of the chemical profession as a whole. The Institute as an organisation should be fully competent to represent the interests both of the teachers and the practitioners, and should endeavour to make those interests identical, so as to avoid that conflict, wasteful competition, overlap and frittering away of resources which had been the curse of educational development in this country. Reviewing the situation as a whole, it would certainly appear that some effort towards standardising the chemical curricula of this country in relation to the examinations of the Institute should be made, or, at any rate, an opportunity should be given for an exchange of views among the teachers concerned. With this object in view, the President suggested that a conference of professors and teachers of chemistry from the recognised institutions should be convened under the auspices of the Institute at some convenient time during the ensuing year.

UNIVERSITY
OF LEIPZIG.

At the same meeting the President announced that the Council had received with gratification a formal intimation that the Philosophical Faculty of the University of Leipzig had decided to regard the Associateship of the Institute as on a par with the Degree of Bachelor of Science in connection with the admission of candidates to the examinations for the Degree of Ph.D.

NEW
BUILDINGS.

Early in 1913, the plans of the proposed new buildings were completed, and the building scheme was provisionally sanctioned by the authorities concerned. Specifications were prepared and tenders invited from a number of well-known contractors; particulars of the plans were published in the *Proceedings*, with an illustration of the proposed elevation, and it was hoped that the work would be commenced in May. However, the lowest tender received—not including the cost of equipment or incidental expenses—was £21,500. This sum was so far in excess of that originally anticipated as to render it impossible for the Council to proceed with the negotiations; but, fortunately, the Duke of Bedford, the ground landlord, agreed to allow an extension of time, in order that the Buildings Committee and the architect might make modifications bringing the total cost more approximately to the means likely to be available.

By deciding not to include a residence for the Registrar, by reducing the height of the building by one storey, and by other

minor alterations, the Council were advised that a building duly equipped and suitable for the purposes of the Institute could be secured for the inclusive sum of £17,080. Towards this total about £12,700 had been received and promised, nearly £11,000 being immediately available. Seeing that the cost of maintenance and other additional incidental expenses in the new building would render it most desirable that the income of the Institute should not be reduced, it was obviously important that the comparatively small reserve funds should be preserved intact, if possible ; but the Council felt that, as the amount then raised was so much below the revised estimate of the cost, the Fellows and Associates would desire to place them in possession of ample security for the fulfilment of the scheme, and they, therefore, decided to summon an Extraordinary General Meeting to authorise the transfer, if and when necessary, of a sum not exceeding £3,500 from the General Fund to the Buildings Fund.

The meeting was held on June 18th, 1913, when the President explained that the estimate for the original building scheme had been enhanced not only by the lately increased cost of materials, but also by the fact that the site selected was at a corner, which, although advantageous in many respects, involved outside work on all sides, the actual frontages extending about 130 feet, and the back being finished in white glazed brick. The building as planned in the revised scheme would be carried out without unnecessary enrichments ; would be adequate for many years to come ; and the foundations would be strengthened to allow for possible further extension in height. The Council desired to proceed with the work, and asked for power to utilise part of the reserve general funds, if such course should become necessary. They hoped that they might be saved the necessity of acting on the power thus sought, but the time had come to take a decisive step.

The Council had much gratification in reporting the generous offer of an anonymous friend who had promised to contribute £1 for every £1 subscribed—beyond £12,000—up to the sum of £2,500, whereby practically the total required to complete the revised scheme would be provided, conditionally on subscriptions to the same amount (*i.e.*, another £2,500) being received from other contributors.

1913.

NEW
BUILDINGS.

The Honorary Treasurer—Mr. A. Gordon Salamon—said that, in view of the approaching termination of the lease of 30, Bloomsbury Square, the matter had become urgent. The resolution involved the possible utilisation of the proceeds of the redemption policies falling due in 1914. The Council and Buildings Committee realised that it was best to place the facts before the Fellows and Associates, and to ask for their support in order that this important move should not be longer delayed. The Institute was fortunate in having been allowed an extension of time to complete the arrangements for the revised building scheme. The thanks of the Institute were due to the Duke of Bedford for this consideration, and the Fellows and Associates would learn with gratification that his Grace had promised that the Institute, on leaving the present premises, would be treated on the most favourable terms with regard to dilapidations. With the generous promise to which the President had referred, the Council would be in a position to regard the resolution, if carried, as a safeguard to enable them to enter into the building contract. They would utilise the funds referred to only in the event of the Buildings Fund not being completed when the expenditure was incurred. He formally moved:—

“That the Council be empowered to transfer, if and when they deem it necessary, a sum not exceeding £3,500 from the General Funds of the Institute to the Buildings Fund of the Institute, and to apply such sum or any part of it in the erection and equipment of buildings for the use of the Institute.”

Sir William Tilden seconded and, after some discussion, the resolution was carried *nem. con.*

The proposal for the building lease and the building contract were duly signed and sealed, and the work was commenced at the end of August, 1913, the selected contractors—Messrs. Higgs and Hill, Ltd.—having agreed to proceed with the building, exclusive of laboratory fitments, at a provisional estimate of £14,000, calculated on the basis of the rates specified in their original tender, the work to be remeasured on completion.*

* Fellows and Associates who take special interest in botany will recollect that there was considerable comment on the growth and the

A new perspective sketch of the building and the revised plans were included in *Proceedings*, Part IV., 1913, in order that the Fellows and Associates might be informed of the alterations which had been made since the original design was abandoned.

1913.

As matters affecting the interests of public analysts in various districts were still constantly engaging the attention of the Council, it was decided that the Association of Public Analysts of Scotland and the Irish Analysts' Association should be invited to appoint representatives to serve on the Public Appointments Committee. PUBLIC ANALYSTS.

Early in April, the Committee arranged a special meeting for the purpose of hearing the views of a Fellow in Ireland, who afforded them considerable information as to the conditions of practice in that country, and whom they invited to consult with his colleagues in the Irish Analysts' Association, to obtain from that body any views as to action which the Council of the Institute might take conducing to an improved position of the profession in Ireland.

In May, a meeting was held in Edinburgh, which was attended by members from Aberdeen and Glasgow, and also by the Registrar of the Institute, acting under instructions from the Council. The conditions attaching to public analytical appointments in Scotland were discussed, the terms offered in certain instances being considered inadequate. It was evident that, in such cases, public analysts of long standing could be relied on to refrain from becoming candidates, although the complete concurrence of the Fellows could not be secured. There was decided evidence, however, that almost all who practised in Scotland in connection with the Adulteration Acts were resolved to support the Association of Public Analysts of Scotland in its endeavour to improve

variety of species of plants on sites in London rendered vacant by the clearance of old houses in connection with various improvements. Mr. J. C. Shenstone, F.L.S., brother of the late W. A. Shenstone, a Fellow of the Institute, investigated the flora of a number of these sites, including those near the British Museum—of which that for the new buildings of the Institute formed part—and contributed a report on the subject to the *Journal of Botany* (April, 1912).

the status of the profession. A report of the meeting and of subsequent negotiations with local authorities was published in the *Proceedings*. The Registrar was also granted an interview with the Secretary of the Local Government Board for Scotland, to whom he explained the position of the Institute with regard to appointments of public analysts generally. The Secretary promised that the representations of the Institute would receive the careful consideration of the Board, but indicated that the Board could not interfere in the question of remuneration.

The Council subsequently invited the Council of the Society of Public Analysts to appoint representatives to act with the Public Appointments Committee of the Institute, to consider generally the conditions and terms of appointments of public analysts, with a view to the publication of a statement showing how the work of the public analyst had increased in difficulty and complexity since the first Food Act was passed, while there had been no increase, but rather a diminution, in the remuneration for such work ; and to consider the best way of bringing the facts set forth in the statement to the knowledge of the Local Government Boards and local authorities.

The Joint Committee prepared a statement on the "Conditions of Appointments of Public Analysts," proofs of which were circulated among public analysts in Great Britain and Ireland, their opinions being invited thereon. Subsequently, the Joint Committee, having taken into consideration the views received, revised the statement, which, with the approval of the Councils of the Institute and the Society, was issued to local authorities concerned with the administration of the Sale of Food and Drugs Acts, with a covering letter signed by the President of each Body. In transmitting the statement, no specific reference was made to any particular case. The Councils expressed the hope that, in the interests of the proper administration of the Acts, the statement would receive due consideration, particularly in view of the circumstances that the Institute had been incorporated for the special purpose of providing the community with qualified professional chemists for such appointments as those of public analysts, and that the Society of Public Analysts, since the passing of the Act of

1875, had by its work and publications, been the main source of the advancement in this country of knowledge of the chemistry of food and drugs.

1913.

This statement was published in the *Proceedings* of the Institute and in a separate pamphlet. It was shown that the labours of the public analyst had increased in complexity, in difficulty and in cost, and that higher qualifications were required of him, not only by the more exacting nature of his work, but also by the Regulations of the Local Government Boards; that the tendency of the local authorities was to decrease the remuneration; that tenure of office of public analysts was insecure; that the relative official position of the public analyst to other officers was not clearly defined or understood by local authorities; and that, except in isolated cases, no provision was made for the inclusion of public analysts in any superannuation scheme.

The Council of the Institute and the Council of the Society of Public Analysts expressed their opinion that, unless the conditions attaching to the appointments of public analysts were improved, these would cease to attract professional chemists of the proper type; that it was desirable that these circumstances should be considered whenever a vacancy occurred in the office of public analyst; and that a scale of remuneration detailed in the pamphlet should be adopted.

The pamphlet also included an appendix giving particulars of legislation and Government departmental regulations and recommendations which had increased the work or the responsibility of the public analysts since 1907.

The Special Committee appointed to prepare a schedule of fees for professional work, having received the views of the Council of the Society of Public Analysts, reported to the Council of the Institute suggesting a schedule of remuneration for public analysts and official agricultural analysts, and this was incorporated in the statement prepared by the Joint Committee referred to above.

PROFES-
SIONAL
CHARGES.

With regard to fees for general practice, the Committee reported that they had come to the conclusion that it was impossible to draw up a scale which was likely to be generally accepted under the varying conditions of practice. They

1913.
PROFES-
SIONAL
CHARGES

were of opinion, however, that a good purpose would be served by placing in the hands of the Registrar a list of fees as commonly charged in the various branches of the profession, so that Fellows and Associates desiring to make specific inquiries as to the charges for particular work could obtain such information from the Institute.

The Committee, therefore, prepared a draft schedule of fees which might reasonably be charged under ordinary circumstances, and which could be supplemented by the Registrar obtaining advice from Fellows known to be experienced in any particular branch of practice which might be the subject of inquiry.

REGULA-
TIONS.

In 1913, the Council made further revision in the syllabus of the Final Examination in Branch (e), the Chemistry of Food and Drugs, etc., the object being to emphasise the necessity for systematic training and experience in microscopy, at the same time restricting the medical knowledge required to that deemed to be essential to a public analyst. A course in microscopy, to be taken in conjunction with the compulsory course in botany, by candidates taking the Final Examination in this branch, was also defined. The revised syllabus was submitted to the Local Government Board and duly approved.

It was ascertained that a considerable number of Registered students neglected to take the examinations. The Council, therefore, decided to enforce more strictly the regulations with regard to the period of registration, so that no student should be permitted to remain registered beyond five years without presenting himself for examination, and no student, whose name had been registered for that period, should be allowed to continue registered for a period exceeding two years after any unsuccessful attempt at the Intermediate Examination, without special permission of the Council.

The object of these regulations was not to deter *bonà fide* prospective candidates, but to remove from the Register those who had no intention of proceeding to the Associateship.

In view of the nature of the training afforded in recognised schools of technology, a regulation was also introduced, on the advice of the Chemical Technology Examinations Board, to the effect that Associates who held the degree of B.Sc.

Tech., should be entitled to become candidates for the Special Examination after six months' registration instead of a year, as required in other cases.

1913.

In 1913, the Council recorded with regret the death of Sir Walter Noel Hartley, who, it will be recalled, was one of the actual founders, having acted as Honorary Secretary to the original Organisation Committee from its appointment until the first meeting of the Council of the Institute.

DEATH OF
SIR WALTER
NOEL
HARTLEY.

A Royal Commission on the Public Services of India having been appointed, the Council of the Institute authorised a Special Committee, under the chairmanship of Sir Alexander Pedler, C.I.E., to collect information with regard to the conditions of official chemical appointments in that Empire. The Committee prepared a memorandum which was duly approved by the Council and forwarded for the consideration of the Royal Commission sitting at Calcutta, in January, 1914.

ROYAL COM-
MISSION
ON THE
PUBLIC
SERVICES IN
INDIA.

The Council were invited subsequently to appoint a representative to give evidence before the Commission, and Sir Alexander Pedler, accompanied by the Registrar, attended a meeting of the Commissioners held at the India Office on May 8th, and supported the views expressed in the Memorandum.

In accordance with the announcements made earlier in the year—both in the President's Address at the Annual General Meeting (p. 270) and in the *Proceedings*—a Conference of Professors of Chemistry was held at the Institute on October 17th, to consider the relation of the qualifications of the Institute to those of other educational institutions, the general question of the training of professional chemists, and the work of the Institute in matters of professional interest.

CONFERENCE
OF PRO-
FESSORS OF
CHEMISTRY.

Prior to the meeting, a preliminary statement, prepared by the President as a basis for discussion, was circulated among the members of the Conference. He reviewed the objects of the Institute and showed how they had been fulfilled. He discussed briefly the subjects to be submitted for consideration, introducing a number of questions which were then before the Council, particularly, the recognition

1913.
CONFERENCE
OF PRO-
FESSORS OF
CHEMISTRY.

of science degrees of somewhat specialised technological character, the standard of training in physics, and the recognition of further institutions for the training of candidates for the Institute. The views of members of the Conference were invited and the replies received were also circulated, in order that they could be considered before the meeting.

About sixty members attended, including professors of chemistry representing nearly all the principal educational centres in Great Britain and Ireland, the Vice-Presidents and Members of Council, members of the Board of Examiners and of the Chemical Technology Examinations Board, past Examiners, and others interested in the educational and examination work of the Institute.

The Conference clearly afforded a much needed opportunity for the interchange of opinion among those responsible for the training of students for the practice of the profession of chemistry in its various branches, and it was gratifying to the President and Council that the Institute received such a cordial response from the professors and teachers.

The speeches were characterised by frank and open criticism of the existing Regulations for the admission of candidates to the Institute, and of the examinations both of the Institute and of the universities. The discussion was continued throughout the day, and the speeches were fully reported and published in a special pamphlet which was issued to all Fellows and Associates, and widely distributed among professors and teachers of chemistry throughout the country. It included not only the speeches of professors and others who were present, but also the written contributions of those who were unable to attend.

REGULA-
TIONS.

This report has so recently been in the hands of the members that it is scarcely necessary to incorporate here an abstract of so comprehensive a discussion. It is sufficient for the present purpose to mention that the Council immediately appointed a special Regulations Committee to take into consideration the proposals advanced and to report thereon. The task of the Committee covers such an extensive schedule of questions that they can scarcely hope to report before this volume is published ; but it may be safely predicted that their

findings will in no way endanger the present standard of requirements for the membership, while they will certainly afford means whereby the Institute may be brought into closer relation with the universities and colleges, and thus strengthen its position and influence as a representative organisation.

The Regulations adopted in 1893 have been constantly broadened and improved, but the advance of education in chemical science, which the Institute has consistently fostered, has been so rapid and has so changed the relations of the Institute to the universities as to necessitate further and, possibly, radical modifications. Thus, it may be anticipated that history will repeat itself: as in 1893, a transference of the headquarters of the Institute was made at a period when, under the guidance of Prof.—now Sir William—Tilden, the Regulations were undergoing the process of stringent revision, so, twenty-one years later, the acquisition of more permanent headquarters for the Institute will be coincident with the full consideration of the educational aspect of its public work.

During the Session 1913—1914, lectures were delivered by LECTURES.
Mr. W. P. Dreaper, on "The Research Chemist in the Works, with Special Reference to the Textile Industry," and by Mr. William Macnab, on "Explosives."

Towards the close of 1913, the attention of the Council was directed to the fact that, on the retirement of Professor Frank Clowes from the office of Chemist to the LONDON
COUNTY
COUNCIL. London County Council, the Chemical Department had been reorganised, so that the bulk of the work came under the direction of the Medical Officer of Health. After correspondence with Mr. Cyril S. Cobb, Chairman of the London County Council, an interview was arranged between him and the President, Treasurer and the Registrar of the Institute, this taking place on February 3rd, 1914.

The President indicated the position of the Institute in relation to the profession of chemistry, maintaining that the training for professional chemists was analogous to that required in other professions. The recent changes made—whereby the Chemical Department of the London County Council had ceased to exist as a separate entity and the

1914.

LONDON
COUNTY
COUNCIL.

majority of the staff had been transferred to a position subordinate to the Medical Officer of Health—constituted a dangerous example, which would tend to be injurious to the profession. No doubt the action of the County Council had been taken from motives of economy, and could be justified in the public interest on that score; but the Institute desired to point out that the position of the chemist, as a distinct professional officer, had been ignored, and other Authorities throughout the country might be tempted to follow the example thus set. The existing chemical staff had taken no part in raising the question; but the Council of the Institute felt that they owed it to the Fellows and Associates and to the profession of chemistry to represent these views to the County Council. In doing so, they were following a policy of endeavouring to obtain proper recognition for the status of the profession. The President hoped that the Chairman would give the matter his consideration and, if possible, let the Institute have some expression of opinion indicating that the changes made by the London County Council had been made solely with a view to effecting economies.

The Hon. Treasurer, in the course of his remarks, said the Institute wished to be assured that the Council had not adopted the course it had taken under any impression that the official chemists should necessarily be subordinate to a medical officer. In connection with the erection of the new County Hall, the County Council would probably require the quality of the building materials used to be investigated; for instance, he presumed that a sample of steel would be sent to the Medical Officer and that the report on it would pass through his hands.

The Chairman said that would be so.

The Registrar indicated that in the case of other County Councils, the Public Analysts were independent officers. Of the appointments under the Sale of Food and Drugs Acts, 96 per cent. were held by Fellows of the Institute; and where the chemist occupied a whole-time appointment, that officer held an independent position, reporting directly to his authority.

THIRTY-
SIXTH
ANNUAL
GENERAL
MEETING.

The Chairman said that he would give the matter his very careful consideration, and his reply was referred to in the President's Address at the thirty-sixth Annual General Meeting, which was held on March 2nd, 1914.

The President, in the course of his address, referred to the progress of the fund for the new buildings of the Institute, and acknowledged the generous support of many companies, firms and individuals, other than members, who had contributed.

Referring to the endeavours of the Institute to secure fuller recognition for the profession of chemistry, the President recalled the evidence given by Sir William Tilden and Sir William Ramsay, as representatives of the Institute, before the Royal Commission on the Civil Service. The main portion of their evidence related to the conditions of service of chemists engaged in the Department of the Chief Inspector at Woolwich Arsenal. The Council of the Institute, in the Memorandum submitted to the Royal Commission, stated that the chemical staff in that Department should be controlled by a chemist of the highest efficiency. The rapid development of Science in every direction was leading to increased specialisation. The real expert whose knowledge and experience were of most value to the community was the highly trained man who had specialised in some particular field. Surely such

a man was the most competent to control the work of any public department which was concerned with his own subject. The training and experience which had raised him to his position of efficiency were no less protracted and severe than those required for the attainment of a similar status in any other profession. Why, therefore, should there be this tendency to subordinate expert scientific service to non-expert control? This state of affairs, rendering as it did the public service of chemists an unattractive career to the best talent in the profession, was fraught with danger to the future well-being of the country, and was a short-sighted policy which, in time of trouble, might well lead to disaster. It was a matter which could not be lightly dismissed on the ground that it affected only a small number of chemists—it was a question of principle of far-reaching consequences, and it was to be hoped that the Royal Commission would give heed to the representations of the Institute.

Another move in this same direction was the re-arrangement of the chemical staff of the London County Council which had been carried out since the retirement of Dr. Clowes. Under the new scheme, the Chemical Department—as an independent department—ceased to exist, and the majority of the chemical staff was subordinated to the Medical Officer of Health. This again, appeared to be a distinctly retrograde step and one which the Institute could not but deplore. The matter had been represented to the Chairman of the County Council, and he had made it perfectly clear that in this rearrangement there had been no intentional slur cast upon the status of the chemical staff; but the President held that it was a dangerous precedent, and one which the Institute regarded with apprehension for several reasons. There was the impression left on the public mind that the services of the chemist were of less importance than formerly; whereas, in fact, as time went on, they were certain to become more and more important. Further, there was conveyed the idea that the status of the professional chemist was an inferior one—in other words, that his profession was to be degraded in rank, with corresponding exaltation of a kindred profession, a principle to which the Institute could not give its sanction.

The Council had also dealt with the conditions of appointments of public analysts, on which subject they had prepared a statement which had been published in the *Proceedings* and would be issued to members of many local authorities. It was hoped that, by this publication, the authorities might realise and appreciate more fully than they appeared to have done in the past the nature and responsibilities of these public officers.

In other branches of the profession, particularly in its applications to industry, the prospect for young chemists was improving. Not only was there little difficulty in placing Associates in appointments, but they were offered higher commencing salaries than formerly and, although the cost of living had greatly increased, they were generally able to secure a "living wage" in most branches of the profession at the outset of their careers which had been much less frequently the case a few years before.

Prof. Meldola then dealt at considerable length with the Report of the Conference of Professors of Chemistry. The Institute had provided an arena for the free discussion of the broad question of the education of professional chemists. The report was under the consideration of a special committee, composed of representatives of every department of the profession, whose task would be one of no little magnitude, and would probably effect considerable recasting of the regulations of the Institute in the light of modern educational development.

1914.
THE NEW
BUILDINGS.

The contractors made good progress with the new buildings until the end of February, when the work was temporarily stopped owing to a trades dispute which is not yet settled. The Buildings Committee and the Architect, however, devoted their attention to the details of the equipment of the laboratories, this part of the work being contracted for separately. The Finance and House Committees prepared an estimate for furnishing, and further steps were taken towards securing the funds necessary for the completion of the scheme.

In view of the delay caused by the trades dispute, the contractors requested an extension of time, and the Council, realising that the work could not be finished in the period stipulated, approached the Steward of the Duke of Bedford and were granted permission for the Institute to occupy the premises in Bloomsbury Square, if necessary, until Christmas, although the lease would be determined at Michaelmas.

RETROSPECT. The foregoing pages, recording the history of the Institute to its thirty-seventh year, bear evidence of the earnest endeavours of the Council and the members generally towards the organisation of their profession and the maintenance of its efficiency and status.

A few of the more salient points may be briefly recapitulated.

It has been shown that, at the time of the foundation of the Institute, very few universities or colleges in this country provided satisfactory preparation for the profession of chemistry, and it may be claimed that the Institute, by its examinations, in which a very high standard has been maintained, has taken no small part in the development of systematic chemical education. It has succeeded in forming a register of competent reliable chemists for the service of the community in the various branches of work—as consultants and analysts in private practice, in industry, and in Government and municipal laboratories, and as professors and teachers of chemistry.

In connection with legislation, the Institute has endeavoured to assist the Government in all matters on which the science



Drawn by Fred Taylor.

THE NEW BUILDING OF THE INSTITUTE.

Architect: Sir John J. Burnet, LL.D.

of chemistry has a bearing ; whilst the Government in return has in a large measure recognised the work and qualifications of the Institute, though, as has been indicated, the importance of the services of the chemist is not yet as fully realised as the Institute would deem desirable.

By the Conferences on professional matters and by the work of the Censors, the Institute has fostered among the members a sense of mutual responsibility in their relations to the public and to one another as professional men. By the Lectures Scheme, students and members are brought into touch with men of experience, and thus obtain an insight into the actual conditions of practice. Through the Appointments Register, the Institute has provided a means whereby authorities and employers can secure competent chemists, and newly qualified Associates and the younger members generally can be informed of suitable vacancies. In connection with this department of its work, the Institute has the assistance of the honorary corresponding secretaries, who are able to advise Fellows and Associates with regard to appointments in India and the overseas Dominions. The Library, further, provides a steadily growing collection of standard works of reference, which has proved of much service to the Fellows and Associates, to students, and to candidates for the various examinations.

The Council and officers of the Institute have been ever ready to consider suggestions for the furtherance of its work, and, so far as they have been able, have extended the privileges of the Fellows, Associates and students. The office, too, has become increasingly useful to members and others requiring information and advice on matters of professional interest.

It is difficult to realise what the position of professional chemists would have been at the present day if no such institution had been founded, and no attempt been made to bring together in one body those who practise in a calling now so necessary to the affairs of everyday life and the progress of civilisation. It is clearly to the interest of all such chemists that they should co-operate in furthering the welfare of their profession, and that there should exist a

RETROSPECT. representative body to which the Government, the community and the members themselves should be able to turn for advice and assistance. It is hoped, therefore, that the Institute will become more and more thoroughly representative of the whole profession.

With the loyal co-operation of the Fellows and Associates, the Council and officers look forward with full confidence to its continued and steady advance both in prestige and influence.



Elliott and Fry, Ltd.

RICHARD BERTRAM PILCHER,
(Fellow, and Member of Council, of the Chartered Institute of Secretaries),
Assistant Secretary, 1894-95; Secretary, 1895-1900; Registrar
and Secretary since 1900.

APPENDIX

CONSTITUTION AND MANAGEMENT.

Under the provisions of the Royal Charter the management ^{THE} and superintendence of the affairs of the Institute are vested ^{COUNCIL.} in a Council elected by the Fellows and Associates in general meeting, and consisting (subject to the provisions of any Bye-Law) of not more than thirty-six Fellows, including the President, six Vice-Presidents, and the Honorary Treasurer. The Council are entrusted with the appointment and removal of the officers and staff of the Institute ; they control the funds and may apply them in any way for promoting the objects of the Institute—except in erecting or purchasing a building or in purchasing a site for a building, in which case the consent of a general meeting of the members is necessary. Subject to certain broad principles set forth in the Charter, the Council have power to decide all applications for admission to the studentship, to the examinations, and to the membership ; to make all arrangements for the examinations, and to grant certificates. The Council, moreover, on a report from the Censors, are required to conduct the hearing and pass judgment in the case of a member being deemed liable to exclusion or suspension under section 16 of the Charter.

The method of election of the Council is prescribed in Chapter IV. of the Bye-Laws. The President and Vice-Presidents and members of Council are ineligible for re-election after three years' successive service ; thus practically one-third of the Council retires annually, though a member of Council may be nominated for election as a Vice-President, and a Vice-President may be nominated for election as President. By this method of election, a large proportion of the Fellows has been afforded an opportunity of becoming intimately associated with the work of the Institute, and this has tended to secure their continued interest in its affairs after they have completed their period of service.

In preparing the balloting list, the Council are required

to receive up to three nominations if any be put forward from the general body, the remaining nominations for vacancies being decided by ballot by the Council, having regard as far as possible to the due representation of the interests of members in various parts of the country and as engaged in different branches of the profession. The President, Vice-Presidents and Treasurer are also nominated by the Council, so that the responsibility of nominating the officers and two-thirds of the members of the governing body is vested in the Council. The balloting list thus prepared is issued to all Fellows and Associates. The votes may be posted to the Secretary at any time before the day of the Annual General Meeting, and the result is declared on the report of scrutineers appointed at the meeting.

COMMITTEES. For the convenience of administration, the Council may delegate their powers to Committees consisting of members of their own body, and they may also appoint, for any purpose not involving the delegation of powers conferred by the Charter or Bye-Laws, special committees (not necessarily consisting exclusively of members of Council), who may report and submit recommendations.

The Standing Committees are : (i.) the Finance Committee, meeting at the discretion of the Honorary Treasurer, to examine the accounts, recommend payments, advise on investments, and prepare the annual statements for the Honorary Auditors and also a report on the accounts for inclusion in the Report of Council ; (ii.) the House Committee, to maintain the premises of the Institute in repair and to consider and report on proposals for alterations, additions, fitments, etc. ; (iii.) the Institutions Committee, to consider and report on applications from universities, colleges or other institutions for recognition of courses of training, Degrees, etc., in connection with the Regulations for admission to the Institute ; (iv.) the Nominations and Examinations Committee, to consider and report on applications from candidates for admission to studentship, examinations, and membership, to interpret and revise the Regulations when necessary, to nominate Examiners, supervise arrangements for examinations, receive and consider the reports of the Board of Examiners and make recommendations thereon to the Council ; (v.) the

Proceedings Committee, to supervise the publications of the COMMITTEES. Institute.

Special Committees are entrusted with the control of the Library and of the Lectures ; a Special Committee reports on communications from the Honorary Corresponding Secretaries who assist in the work of the Institute in various parts of the Empire and in India ; another, the Public Appointments Committee, is concerned with the consideration of matters of professional interest, public appointments, legislation, etc. ; and, lately, Special Committees have dealt with the raising of the Buildings Fund and with the details of the new building.

To ensure a good average attendance at meetings, and partly on account of the fact that over one-fifth of the total number of Fellows reside within easy distance of the metropolis, the Council has usually consisted of about two-thirds selected from London Fellows, the remainder being selected from other centres.

In view of the importance of the educational work of the Institute, it is essential to its well-being that professors and teachers should be well represented on the Council, while representatives of various branches of consulting chemistry, such as public analysts and other official chemists, agricultural chemists, metallurgists, etc., are also included. Thus constituted, the Council as a body may be regarded as one specially capable of carrying out the duties and bearing the responsibilities imposed by the Charter.

One of the principal functions of a recognised professional body is the promotion of a proper understanding as to the conduct of its members in their relation to one another and to the community. Section 16 of the Charter provides as follows :—

16. If any person while he is a member of the Institute—

- (1) Allows any person not being either a member of the Institute or in partnership with himself as an analytical or consulting chemist to practise in his name as an analytical or consulting chemist or
- (2) Is convicted of felony or misdemeanour or is finally declared by any court of competent jurisdiction to have committed any fraud or

THE
CENSORS

- (3) Is held by the Council on the complaint of any member of the Institute or of any person aggrieved to have been guilty of any act or default discreditable to the profession of analytical or consulting chemist or
 - (4) Is adjudged bankrupt or individually or as a partner makes an assignment for the benefit of creditors or under any resolution of creditors or under the order of a court of bankruptcy or under any deed or document has his estate placed in liquidation for the benefit of creditors or makes any arrangement for payment of a composition to creditors or
 - (5) Shall engage in any occupation which in the opinion of the Council shall be inconsistent with his remaining a member of the Institute or
 - (6) Fails to pay any subscription or other sum payable by him to the Institute under this our Charter or Bye-Laws of the Institute for one year after the same has become due
- he shall be liable to be excluded from membership or to be suspended for any period not exceeding two years from membership by a resolution of the Council passed at a meeting specially convened for that purpose with notice of such purpose at which meeting there shall be present not less than eight of the members of the Council and for which exclusion or suspension not less than three-fourths of those present and voting shall vote, and the member having first had an opportunity of being heard, but any such exclusion or suspension may be at any time revoked or modified by the Council at a like meeting by such a majority as aforesaid subject to such terms and conditions (if any) as the Council may think fit, and notice of any resolution for exclusion or suspension shall forthwith be sent to the person affected thereby.

It was already contemplated by those who were responsible for framing the Charter and Bye-Laws that, inasmuch as the requirements for membership were intended to be exacting, no member should be liable to exclusion without just cause or without a fair hearing.

The Bye-Laws require the Council to nominate not less than five persons, from whom four Censors shall be elected annually by ballot at the Annual General Meeting by the members of the Institute personally present at such meeting. The President is *ex-officio* a fifth Censor.

Under Bye-Law 62 the Censors are required to investigate all complaints arising under section 16 of the Charter. Such complaints should, therefore, be addressed to the Censors. They may call an offending Fellow or Associate before them and may admonish or reprimand him; or, if they deem the case of sufficient importance, may call upon him to resign his connection with the Institute, and, should he decline, may report him to the Council, in order that such further steps may be taken as are provided by the Charter. Up to this point, the decision of the Censors is untrammelled and final

and, even if the offending member decline to resign, it rests with the Censors to report to the Council or not as they deem fit. In all such cases, the proceedings of the Censors are conducted strictly in accordance with legal advice. There is no obligation on the Council or Censors, nor is it considered advisable so far as they are concerned, to take the initiative in bringing forward any question of this kind which is to be investigated by them. The initiative rests with "any member of the Institute or person aggrieved." A member of Council or a Censor is not debarred from making a complaint; but in such a case, to avoid the question of prejudice in possible subsequent proceedings, he should not take part in the investigation or in deciding the action to be taken upon it. The Council have no power to take independent action until the Censors have reported to them in accordance with Bye-Law 62, and when the Censors have so reported, the powers of the latter on any particular case cease.

In the event of the exclusion or suspension of a member, every certificate of membership then held by him must be delivered to the Council, to be cancelled or to be retained during his suspension. In such cases, the Council are at liberty to cause notice of the exclusion or suspension to be published in such newspapers and journals as they may select. Further, section 17 of the Charter provides that, if any person ceases, for any cause whatever, to be a member of the Institute, he shall not, nor shall his representatives, have any interest in or claim against the funds or property of the Institute, nor shall he use any initials after his name implying that he is a Fellow or Associate of the Institute.

LIST OF PAST PRESIDENTS, VICE-PRESIDENTS, CENSORS, TREASURERS, REGISTRARS, SECRETARIES, AND EXAMINERS OF THE INSTITUTE OF CHEMISTRY.

PAST PRESIDENTS :

Sir EDWARD FRANKLAND, K.C.B., D.C.L., F.R.S. (<i>Deceased</i> 1899)	1877-1880
Sir FREDERICK AUGUSTUS ABEL, Bart., K.C.B., G.C.V.O., D.C.L., F.R.S. (<i>Deceased</i> 1902)	1880-1883
WILLIAM ODLING, M.A., M.B., F.R.S.	1883-1888
JAMES BELL, C.B., D.Sc., Ph.D., F.R.S. (<i>Deceased</i> 1908)	1888-1891
Sir WILLIAM AUGUSTUS TILDEN, LL.D., D.Sc., F.R.S.	1891-1894
WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (<i>Deceased</i> 1909)	1894-1897
Sir THOMAS STEVENSON, M.D., F.R.C.P. (<i>Deceased</i> 1908)	1897-1900
JOHN MILLAR THOMSON, LL.D., F.R.S.	1900-1903
DAVID HOWARD	1903-1906
PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S.	1906-1909
GEORGE THOMAS BEILBY, LL.D., F.R.S.	1909-1912
† RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S.	1912-

PAST VICE-PRESIDENTS :

Sir FREDERICK AUGUSTUS ABEL, Bart., K.C.B., G.C.V.O., D.C.L., F.R.S. (<i>Deceased</i> 1902)	1878-80, 1884-90
WALTER ERNEST ADENEY, D.Sc.	1901-04
HENRY EDWARD ARMSTRONG, Ph.D., F.R.S.	1886-90
† GEORGE THOMAS BEILBY, LL.D., F.R.S.	1902-05, 1912-
JAMES BELL, C.B., D.Sc., Ph.D., F.R.S. (<i>Deceased</i> 1908)	1880-82, 1891-94
† EDWARD JOHN BEVAN	1905-08, 1914-
ALEXANDER CRUM BROWN, M.D., D.Sc., LL.D., F.R.S.	1878-80, 1882-84, 1890-92, 1898- 1901
Sir CHARLES ALEXANDER CAMERON, C.B., M.D.	1884-90
MICHAEL CARTEIGHE (<i>Deceased</i> 1910)	1882-84, 1890-93
FREDERICK DANIEL CHATTAWAY, M.A., D.Sc., Ph.D., F.R.S.	1903-05
FRANK CLOWES, D.Sc.	1900-03, 1910-13
EDWARD DIVERS, M.D., D.Sc., F.R.S. (<i>Deceased</i> 1912)	1905-08
† JAMES JOHNSTON DOBBIE, M.A., LL.D., D.Sc., F.R.S.	1914-

† In Office.

PAST VICE-PRESIDENTS—continued.

AUGUSTE DUPRÉ, Ph.D., F.R.S. (<i>Deceased</i> 1907)	1885-88, 1894-96
BERNARD DYER, D.Sc.	1908-10
THOMAS FAIRLEY	1896-99
JOHN FERGUSON, M.A., LL.D.	1884-90
MARTIN ONSLOW FORSTER, D.Sc., Ph.D., F.R.S.	1908-11
Sir EDWARD FRANKLAND, K.C.B., D.C.L., F.R.S. } (<i>Deceased</i> 1899)	1880-82, 1884-88, 1891-94
PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S.	1903-06, 1909-12
RICHARD JOHN FRISWELL (<i>Deceased</i> 1908) . .	1895-98
ROBERT GALLOWAY (<i>Resigned</i> 1882)	1878-80
CHARLES GRAHAM, D.Sc. (<i>Deceased</i> 1909) . .	1882-84
CHARLES EDWARD GROVES, F.R.S.	1892-95
OSCAR GUTTMANN, M.Inst.C.E. (<i>Deceased</i> 1910)	1907-10
Sir WALTER NOEL HARTLEY, D.Sc., F.R.S. (<i>Deceased</i> 1913)	1880-82, 1895-98
OTTO HEHNER	1893-96, 1899-1902
EGBERT GRANT HOOPER	1908-11
DAVID HOWARD	1882-84, 1906-09
HERBERT JACKSON	1907-08
FRANCIS ROBERT JAPP, M.A., LL.D., F.R.S. . .	1901-04
EDMUND ALBERT LETTS, D.Sc., Ph.D.	1904-07
GEORGE MCGOWAN, Ph.D.	1911-14
RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S. . .	1909-12
EDMUND JAMES MILLS, D.Sc., LL.D., F.R.S. . .	1880-82, 1904-07
BENJAMIN EDWARD REINA NEWLANDS (<i>Deceased</i> 1912)	1898-1901
WILLIAM ODLING, M.A., M.B., F.R.S.	1878-80, 1888-91
† Sir ALEXANDER PEDLER, C.I.E., F.R.S. . . .	1912-
Sir WILLIAM RAMSAY, K.C.B., LL.D., Ph.D., } F.R.S.	1890-93, 1897-1900, 1906-09
† Sir BOVERTON REDWOOD, Bart., D.Sc.	1913-
THEOPHILUS REDWOOD, Ph.D. (<i>Deceased</i> 1892)	1880-1882
JAMES EMERSON REYNOLDS, M.A., F.R.S. (<i>Resigned</i> 1907)	1882-84, 1892-95
The Rt. Hon. Sir HENRY ENFIELD ROSCOE, Ph.D., LL.D., F.R.S. (<i>Resigned</i> 1885) . . .	1880-82
WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (<i>Deceased</i> 1909)	1897-1900
ALFRED GORDON SALAMON, A.R.S.M.	1902-03
ROBERT ANGUS SMITH, Ph.D., F.R.S. (<i>Deceased</i> 1884)	1878-80, 1882-84
Sir THOMAS STEVENSON, M.D., F.R.C.P. (<i>Deceased</i> 1908)	1890-92, 1900-03 1894-97, 1903-06, 1910-13
JOHN MILLAR THOMSON, LL.D., F.R.S. . . . }	
CHARLES MEYMOTT TIDY, M.B. (<i>Deceased</i> 1892)	1888-91
Sir WILLIAM AUGUSTUS TILDEN, D.Sc., LL.D., } F.R.S.	1894-97, 1899-1902, 1911-14
AUGUSTUS VOELCKER, Ph.D., F.R.S. (<i>Deceased</i> 1884)	1878-80, 1884-85
† EDWARD WILLIAM VOELCKER, A.R.S.M. . . .	1913-
JOHN AUGUSTUS VOELCKER, M.A., Ph.D., B.Sc.	1896-99
WALTER WELDON, F.R.S. (<i>Deceased</i> 1885) . .	1884-86

† In Office.

PAST CENSORS:

Sir FREDERICK AUGUSTUS ABEL, Bart., K.C.B., G.C.V.O., D.C.L., F.R.S. (<i>Deceased</i> 1902) ..	1878-80, 1883-88
†GEORGE THOMAS BEILBY, LL.D., F.R.S. ..	1909-
JAMES BELL, C.B., Ph.D., F.R.S. (<i>Deceased</i> 1908)	1884-94
RUSSELL FORBES CARPENTER	1908-09
MICHAEL CARTEIGHE (<i>Deceased</i> 1910)	1891-92, 1893-95
CHARLES EDWARD CASSAL, Col., V.D.	1892-93
Sir ARTHUR HERBERT CHURCH, K.C.V.O., M.A., D.Sc., F.R.S.	1880-83
FRANK CLOWES, D.Sc.	1913-14
WARREN DE LA RUE, LL.D., F.R.S. (<i>Deceased</i> 1889)	1878-80
EDWARD DIVERS, M.D., D.Sc., F.R.S. (<i>Deceased</i> 1912)	1907-08
Sir EDWARD FRANKLAND, K.C.B., D.C.L., F.R.S. } (<i>Deceased</i> 1899)	1880-89, 1892-98, 1899
†PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S.	1906-
RICHARD JOHN FRISWELL (<i>Deceased</i> 1908)	1898-99
JOHN HALL GLADSTONE, Ph.D., F.R.S. } (<i>Deceased</i> 1902)	1879-80, 1882-83, 1884-85
OTTO HEHNER	1901-03
†DAVID HOWARD	1889-92, 1894-1902, 1903-
†GEORGE MCGOWAN, Ph.D.	1914-
†RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S. ..	1912-
WILLIAM ODLING, M.A., M.B., F.R.S. ..	1878-80, 1882-91
JOHN PATTINSON (<i>Deceased</i> 1912)	1880-82
Sir WILLIAM RAMSAY, K.C.B., LL.D., Ph.D., F.R.S.	1890-91, 1906-10
The Rt. Hon. Sir HENRY ENFIELD ROSCOE, LL.D., F.R.S. (<i>Resigned</i> 1885)	1878-79, 1883-84
WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (<i>Deceased</i> 1909)	1885-90, 1894-1904
Sir THOMAS STEVENSON, M.D., F.R.C.P. } (<i>Deceased</i> 1908)	1889-90, 1893-94, 1895-1907
JOHN MILLAR THOMSON, LL.D., F.R.S. ..	1900-12
Sir THOMAS EDWARD THORPE, C.B., LL.D., Ph.D., F.R.S. (<i>Resigned</i> 1892)	1890-92
Sir WILLIAM AUGUSTUS TILDEN, LL.D., D.Sc., F.R.S.	1891-1901, 1902-06, 1910-13
AUGUSTUS VOELCKER, Ph.D. F.R.S. (<i>Deceased</i> 1884)	1883-84
JOHN AUGUSTUS VOELCKER, M.A., Ph.D., B.Sc.	1904-06
JOHN THOMAS WAY (<i>Deceased</i> 1883)	1880-82

PAST HONORARY TREASURERS:

CHARLES ROMNEY ALDER WRIGHT, D.Sc., F.R.S. (<i>Deceased</i> 1894)	1877-1885
DAVID HOWARD	1885-1903
†ALFRED GORDON SALAMON, A.R.S.M.	1903-

† In Office.

PAST REGISTRARS AND SECRETARIES:

Sir WALTER NOEL HARTLEY, D.Sc., F.R.S. (<i>Deceased 1913</i>)	
<i>Honorary Secretary to the Organisation Committees</i> ..	1875-1877
CHARLES EDWARD GROVES, F.R.S., <i>Secretary</i>	1877-1887
CHARLES EDWARD GROVES, F.R.S., <i>Registrar and Secretary</i>	1887-1892
GEORGE HENRY ROBERTSON (<i>Deceased 1904</i>), <i>Registrar and Secretary</i>	1892-1894
JOHN MILLAR THOMSON, LL.D., F.R.S., <i>Honorary Registrar and Secretary</i>	1894-1895
JOHN MILLAR THOMSON, LL.D., F.R.S., <i>Honorary Registrar</i>	1894-1900
RICHARD BERTRAM PILCHER, <i>Secretary</i>	1895-1900
† RICHARD BERTRAM PILCHER, <i>Registrar and Secretary</i> ..	1900-

PAST EXAMINERS:

WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (<i>Deceased 1909</i>)	1878-1880
WILLIAM RICHARD EATON HODGKINSON, Ph.D.	1880-1882
CHARLES GRAHAM, D.Sc. (<i>Deceased 1909</i>)	<i>London</i>
Sir WILLIAM AUGUSTUS TILDEN, LL.D., D.Sc., F.R.S.	<i>Birmingham</i>
Sir WILLIAM RAMSAY, K.C.B., LL.D., Ph.D., F.R.S.	<i>Bristol</i>
Sir WALTER NOEL HARTLEY, D.Sc., F.R.S. (<i>Deceased 1913</i>)	<i>Dublin</i>
EDMUND JAMES MILLS, D.Sc., F.R.S.	<i>Glasgow</i>
WATSON SMITH	<i>Manchester</i>
JOHN MILLAR THOMSON, LL.D., F.R.S.	1887-1888
JOHN MILLAR THOMSON, LL.D., F.R.S.	<i>London</i>
WILLIAM WALTER JAMES NICOL, M.A., D.Sc., <i>Birmingham</i>	
Sir WALTER NOEL HARTLEY, D.Sc., F.R.S. (<i>Deceased 1913</i>)	<i>Dublin</i>
EDMUND JAMES MILLS, D.Sc., F.R.S.	<i>Glasgow</i>
JAMES CAMPBELL BROWN, LL.D., D.Sc. (<i>Deceased, 1910</i>)	<i>Liverpool</i>
WATSON SMITH	<i>Manchester</i>
THOMAS FAIRLEY	<i>Leeds</i>
THOMAS FAIRLEY	1891-1892
WYNDHAM ROWLAND DUNSTAN, C.M.G., M.A., LL.D., F.R.S.	1892-1895
	1892-1896

FOR THE INTERMEDIATE AND FINAL EXAMINATIONS 1895-1907.

WYNDHAM ROWLAND DUNSTAN, C.M.G., M.A., LL.D., F.R.S.	1895-1896
OTTO HEHNER	1895-1899
PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S. ..	1896-1900
BERNARD DYER, D.Sc.	1899-1903
WILLIAM PALMER WYNNE, D.Sc., F.R.S.	1900-1904
WALTER WILLIAM FISHER, M.A.	1903-1907
GEORGE GERALD HENDERSON, M.A., D.Sc., LL.D. ..	1904-1907

† In Office.

PAST EXAMINERS—*continued.*

FOR THE INTERMEDIATE EXAMINATION AND GENERAL CHEMISTRY.

GEORGE GERALD HENDERSON, M.A. D.Sc., LL.D.	..	1907-1908
BERTRAM BLOUNT .. .. .	..	1907-1911
HERBERT JACKSON .. .. .	..	1908-1912
†ALFRED CHASTON CHAPMAN .. .. .	..	1911-
†ARTHUR WILLIAM CROSSLEY, D.Sc., Ph.D., F.R.S.	..	1912-

FOR THE FINAL EXAMINATION.

(MINERAL CHEMISTRY.)

BERTRAM BLOUNT .. .. .	..	1907-1911
†HERBERT JACKSON .. .. .	..	1911-

(METALLURGICAL CHEMISTRY.)

FRANK WILLIAM HARBORD, A.R.S.M. .. ..	..	1907-1911
†GEORGE THOMAS HOLLOWAY, A.R.C.S. .. ..	..	1911-

(PHYSICAL CHEMISTRY.)

THOMAS SLATER PRICE, D.Sc., Ph.D. .. ..	..	1907-1911
†ALEXANDER FINDLAY, M.A., D.Sc., Ph.D. ..	..	1911-

(ORGANIC CHEMISTRY.)

GEORGE GERALD HENDERSON, M.A., D.Sc. ..	..	1907-1908
WILLIAM HENRY PERKIN, LL.D., Ph.D., F.R.S.	..	1908-1912
JOHN NORMAN COLLIE, LL.D., Ph.D., F.R.S. ..	..	1912-1913
†WILLIAM JACKSON POPE, M.A., M.Sc., F.R.S. ..	..	1913-

(THE CHEMISTRY OF FOOD AND DRUGS, AND OF WATER.)

CECIL HOWARD CRIBB, B.Sc. .. .. .	..	1907-1911
†PERCY ANDREW ELLIS RICHARDS .. .. .	..	1911-

(BIOLOGICAL CHEMISTRY.)

ADRIAN JOHN BROWN, M.Sc., F.R.S. .. ..	..	1901-1906
ARTHUR HARDEN, D.Sc., Ph.D., F.R.S. .. ..	..	1906-1910
GILBERT JOHN FOWLER, D.Sc. .. .. .	..	1910-1914
†ALFRED CHASTON CHAPMAN .. .. .	..	1914-

(THERAPEUTICS, PHARMACOLOGY, AND MICROSCOPY.)

*SIR THOMAS STEVENSON, M.D., F.R.C.P. (<i>Deceased</i> 1908)	1898-1901
ARTHUR PEARSON LUFF, M.D., B.Sc., F.R.C.P. ..	1901-1905
FREDERICK GOWLAND HOPKINS, M.A., D.Sc., M.B., F.R.S.	1905-1909
WILLIAM HENRY WILLCOX, M.D., B.Sc., M.R.C.P. ..	1909-1914
†FREDERICK GOWLAND HOPKINS, M.A., D.Sc., M.B., F.R.S.	1914-

* Honorary. † In Office.

THE ROLL OF THE INSTITUTE.

TABLE SHOWING THE NUMBERS RECORDED IN EACH REPORT
OF THE COUNCIL, 1878—1914.

Date.	Fellows.	Associates.	Total.	Increase for the Year.
Feb., 1878	225	—	225	
1879	341	53	394	169
1880	370	54	424	30
1881	422	51	473	49
1882	412	47	459	(- 14)
1883	396	37	433	(- 26)
1884	396	32	428	(- 5)
1885	403	33	436	8
March, 1886	386	33	419	(- 17)
1887	496	41	537	118
1888	544	45	589	52
1889	685	83	768	179
1890	683	97	780	12
1891	690	123	813	33
1892	704	121	825	12
1893	718	110	828	3
1894	738	109	847	19
1895	760	114	874	27
1896	778	124	902	28
1897	792	121	913	11
1898	820	125	945	32
1899	849	120	969	24
1900	854	126	980	11
1901	876	132	1,008	28
1902	904	140	1,044	36
1903	928	143	1,071	27
1904	947	151	1,098	27
1905	973	163	1,136	38
1906	992	172	1,164	28
1907	1,016	177	1,193	29
1908	1,032	189	1,221	28
1909	1,072	201	1,273	52
1910	1,092	203	1,295	22
1911	1,115	215	1,330	35
1912	1,151	224	1,375	45
1913	1,172	248	1,420	45
1914	1,204	250	1,454	34

INDEX

- ABEL, Sir F. A., i, ii, 31, 32, 37, 38,
40, 50, 58, 67 *et seq.*, 103, 166,
251
Aberdeen University, 12
Aberystwyth, University College
of Wales, 12
Acland, F. D., 203
Agricultural Analyses, 184, 185,
203
Agricultural Analyses, Official
methods, 198
Agricultural Analysts, Official,
127, 184, 185, 189, 195, 203, 205,
214, 218, 242, 243, 256
Agricultural Education, 203
Agriculture, Board of, 148, 149,
159, 162, 195 *et seq.*, 202,
205, 214 (*see also* Agricultural
Analysts)
Alcohol, Industrial, 180
Aldred, C. H., 30, 31
Allen, A. H., 30, 31, 38, 112, 152
Alverstone, Rt. Hon. Lord, *L.C.J.*,
155
Analyst, The, 38, 98
Apothecaries, Society of, 45, 142
Appointments Register, 139, 221
Armstrong College, Newcastle-on-
Tyne, 20
Armstrong, H. E., 31, 38
Articles of Association, 40, 51, 55,
58 *et seq.*
Association of Public Analysts of
Scotland, 189, 205, 273
Attfield, J., 31, 38, 46, 51

BACON, Francis, 246
Bangor, University College of
North Wales, 12
Barnard, Lord, 203
Bartlett, J. C., 31
Bedford, Duke of, 120, 270, 282
Beilby, G. T., iv, 182, 229 *et seq.*
Belfast, Queen's University, 13
Bell, Sir I. Lowthian, 38
Bell, James, iii, 38, 51, 70, 82, 90 *et
seq.*, 214
Benevolent Fund, 95, 139
Berkenhout, George, 45
Bevan, E. J., 152, 188, 195, 198,
215
Biological Chemistry, 149, 150,
155, 162
Biology, 200
Birmingham University, 113
Birmingham, Visit to, 73
Bischof, G., 31
Black, 11
Blake, R. F., 257
Bloomsbury Square, 116, 121
Blount, Bertram, 178, 188, 195,
198, 211, 214, 244
Bloxam, C. L., 38
Bloxam, W. P., 257
Board of Agriculture, 148, 149,
159, 162, 195 *et seq.*, 202,
205, 214 (*see also* Agricultural
Analysts)
Board of Agriculture, Journal of,
187, 197
Board of Education, 11, 161, 178,
179
Board of Inland Revenue, 114,
181, 206
Board of Trade, 40 *et seq.*, 51, 55,
56, 62
Botany, 200
Boyle, 11
Bristol University, 13
British Association, 9, 164
Brown, A. Crum, 38, 51, 52
Brown, A. J., 155
Brown, E. G. H., 215
Brown, J. Campbell, 31
Buildings Fund, 223, 236, 238,
258, 270
Burnet, Sir John J., 260
Burns, Right Hon. John, 218
Butter, Departmental Committee
on, 159
Butter-fat in Margarine, 152
Butterfield, W. J. A., 266
Bye-laws, 83, 85, 107, 119, 124
Byrne, Justice, 146

- CALCRAFT, Henry E., 42
 Cambridge University, 13
 Cameron, Sir Charles, Bt., 149
 Campbell, Dugald, 24, 32, 38
 Cannizzaro, S., 24
 Cardiff, University College, 14
 Carrington, Rt. Hon. Earl, 195,
 197, 214
 Carteighe, Michael, 24, 31, 32, 38,
 39, 41, 51, 77, 105, 119, 148
 Cassal, Col. C. E., 105, 112, 195,
 215, 252, 255
 Cavendish, 11
 Cecil, Lord Robert, 208
 "Cellulose," 244
 "Cement," 244
 Cement, Standards for, 177
 Censors, 51, 58, 60, 119, 123, 129,
 178, 297
 Central Technical College, 18
 Certificates of Membership, 51, 88,
 239
 Certificates, Professional, 60, 105,
 106, 110, 133, 248
 Chairs in Chemistry, 12 *et seq.*
 Charter, The Royal, 39, 51, 74,
 75 *et seq.*, 184, 245
 Chartered Societies Bill, 165
 Chattaway, F. D., 179
 Chemical Industry, Society of, 10
 Chemical Industry, 10, 162 *et seq.*,
 168 *et seq.*
Chemical News, The, 23, 24 *et seq.*,
 29 *et seq.*, 47, 87, 136, 227
 Chemical Society, i, ii, 9, 10, 23,
 31, 32 *et seq.*, 37, 38, 40, 42, 52,
 55, 58, 70, 72, 77, 103, 147,
 164
 Chemical Technology Examina-
 tions, 168 *et seq.*, 182, 200, 276
 "Chemist," The Title, 40, 45 *et*
 seq., 62
 "Chemistry in Gas-works," 266
 Chemists and Druggists, 9, 10
 Church, Sir A. H., 31
 "Chymists," 7, 8
 City and Guilds of London Insti-
 tute, 17
 Civil Service, Royal Commission
 on the, 262, 269, 280
 Clark, John, 198
 Clark, J. W., 195
 Claudet, A. C., 198, 201
 Clowes, Prof. F., 146, 279, 281
 Coal Mines Act, 265
 Coal Tar Industry, 10
 Cobb, C. S., 279
 Colleges, 12
 Colleges, Analyses at, 234
 Committees, 160, 288, 290
 Conduct, Professional, 57, 60, 67,
 70, 74, 83, 107, 119, 123, 133,
 136, 146
 Conferences, 60, 63, 67, 69, 70, 82,
 96, 103 *et seq.*, 109, 110, 133,
 252, 277
 Constitution and Management,
 289
 Contractors, 272
 Corfield, W. H., 31
 Cork, University College, 14
 Council, 52, 289
 Council, Contested Election of,
 106
 Council, Early Work of, 55
 "Cover work," 235
 Craig, Hunter, 166
 Crookes, Sir William, 38, 51, 52,
 180
 Cross, C. F., 244

 DALTON, 11, 48
 Davies, David, 203
 Davis, G. E., 38, 182
 Davy, 11, 39
 Deering, W. H., 31
 Degrees, 164
 De la Rue, Warren, 58
 Deputations, 148, 185, 195, 214
 Dewar, Sir James, 38, 86, 108
 Dinners, 138, 146, 155, 160, 180,
 208, 245
 Divers, Edward, 187
 Dobbie, J. J., 261
 Dobbins, Leonard, 60
 Dreaper, W. P., 279
 Drugs, 69, 82
 Dublin, The Royal Society, 9
 Dublin University, 14
 Dumas, 11, 39
 Dundee, University College, 15
 Dupré, Auguste, 31, 38
 Dyer, Bernard, 127, 146, 148, 160,
 198, 215

 EDINBURGH, Royal Society of, 9
 Edinburgh University, 15
 Education Act, 162
 Education, Board of, 11, 161, 178,
 179
 Educational Work of the Institute,
 156, 269

- Elliott, Sir T. H., 186, 195, 215 *et seq.*
 Engineering Standards, 177
 Evans, Sir Francis, 166
 Evans, Sir John, 138
 Examinations, 58, 59, 60, 73, 81, 94, 95, 96, 99, 105, 114, 120, 125, 130, 135, 139, 145, 147, 150, 152, 155, 157, 161, 162, 183, 201, 243, 257, 276
 Examiners, 60, 94, 155, 198, 201, 202, 298
 "Explosives," 279

 FAIRLEY, Thomas, 215
 Faraday, 11, 67
 Fees and Subscriptions, 52, 81, 83, 135, 177, 222, 238
 Fees, Professional, 71, 133, 235, 252, 257, 268, 275
 Fellows, Rt. Hon. A. E., 185
 Fertilisers and Feeding Stuffs Acts, 127, 189, 195 *et seq.*, 205, 215, 218, 242, 256
 Field, Frederick, 38
 Finance Committee, 285
 Finances, 74, 98, 135, 174, 222, 224, 270
 Finsbury Technical College, 17, 238
 First Annual General Meeting, 40, 58
 Fisher, W. W., 148, 152, 186
 Fitzroy, Sir Almeric, 166
 Food, 63, 82
 Food and Drugs, Chemistry of, 82, 276
 Foreign Chemists, 95
 Forensic Chemistry, 67, 83, 133
 Forster, M. O., 221, 257
 Founders, ii
 Fowler, G. J., 257
 Frankland, Sir Edward, *facing title page*, ii, 11, 24, 31, 32, 37, 38, 40, 50 *et seq.*, 70, 77, 86, 105, 108, 110, 130, 151, 183, 226, 245
 Frankland, P. F., iv, 150, 155, 192 *et seq.*
 French (in Final Examination), 199
 French Chemical Society, 10
 Friswell, R. J., 31, 38, 111, 120

 Gay-Lussac, 39
 Geikie, Sir Archibald, 246
 Gemmell, G. H., 257
 German (in Final Examination), 199
 German Chemical Society, 10
 Gibbs, Alban, 166
 Gilbert, Sir J. H., 31
 Gladstone, J. Hall, 32, 38, 50
 Glasgow, Royal Philosophical Society of, 9
 Glasgow, Royal Technical College, 16
 Glasgow University, 16
 Gordon, J. G., 32
 Gordon, Robert, 147
 Gore, George, 38
 Gowland, William, 178, 198
 Graham, Thomas, 11
 Grosjean, B. J., 32
 Groves, C. E., 32, 38, 52, 55, 88, 106, 130
 Guttmann, Oscar, 182, 221

 HAKE, H. W., 32
 Hall, A. D., 198
 Hall, Capt. Marshall, 38
 Halse, W. E., 32
 Hanbury, Cornelius, 182
 Hanbury, Rt. Hon. R. W., 159, 160
 Harcourt, A. G. Vernon, 32
 Hartley, Sir W. N., i, 24, 32, 33, 35, 38, 44, 50, 55, 277
 Hart-Smith, James, 257
 Hatton, Frank, 60
 Health, International, Exhibition, 82
 Heaton, C. W., 32, 38
 Hehner, Otto, 103, 107, 111, 127, 139, 148, 152, 160, 221, 252, 254, 261
 Heriot-Watt College, 15
 Hermann, Douglas, 38, 52
 Hill, C. A., 266
 Hofmann, A. W., 50, 67, 77, 103
 Home Office, 72, 207, 265
 House Committee, 120, 135, 285
 Howard, David, iv, 32, 38, 52, 82, 110, 119, 148, 168 *et seq.*, 182, 211, 222, 226, 261
 Hughes, John, 127

 Idler, The, 8
 Imperial College of Science and Technology, 18

India, 73, 173, 207, 233, 277
 India, Royal Commission on the
 Public Services in, 277
 Industrial Alcohol, 180
 Inland Revenue, Board of, 114,
 181, 206
 Institutions Committee, 181, 288
 Irish Analysts' Association, 273

JACKSON, Herbert, 240
 Japan, 73
 Johnson, Dr., 8
 Jones, E. W. T., 31
 Journal, 69, 98, 99
 Jury Service, 30

KELVIN, Lord, 138
 Kinch, Edward, 32
 King's College, London, 18, 55
 Kingzett, C. T., 32, 38, 50, 52,
 110
 Kipping, F. S., 225, 227

LABORATORIES, 120, 135
 Lamont, Norman, 203
 Lanchester, H. V., 120
 Latham, T., 203
 Latin (in Preliminary Examination), 198
 Lavoisier, 48
 Law, Sir E. F., 173
 Lectures, 72, 240 *et seq.*, 244, 266,
 279
 Leeds University, 17
 Leipzig University, 210, 270
 Library, 139, 147, 182, 201, 210
 Licences for Stills, 114, 206
 Liebig, 11, 39
 Life Compositions, 177
 Liverpool University, 17
 Lloyd, E. J., 114
 Lloyd, F. J., 103
 Local Government Board (*see also*
 Public Analysts), 215 *et seq.*,
 231, 247, 251
 Local Government Board for
 Scotland, 189, 274
 London Colleges, 17 *et seq.*
 London County Council, 161, 166,
 223, 238, 279, 280, 281
 London University, 238
 Long, Rt. Hon. Walter, 148
 Lyte, F. Maxwell, 32

MACADAM, Stevenson, 110
 Macdougald, G. D., 257
 Macfarlane, Walter, 198
 Macnab, William, 279
 Manchester Literary and Philo-
 sophical Society, 9
 Manchester Municipal School of
 Technology, 20
 Manchester University, 19
 Manning, Frederick, 24, 32, 38, 50
 Mansfield, Earl of, *L.C.J.*, 116
 Marreco, A. F., 38
 Maskelyne, N. S., 182
 Mason College, Birmingham, 13
 McCrae, John, 246
 McGowan, George, 261
 McKenna, Rt. Hon. Reginald, 210
 Medd, J. C., 203
 Medical Officers of Health, 145,
 158, 242
 Meldola, Raphael, iv, 10, 120, 162,
 238, 249 *et seq.*
 Mendeléeff, 138
 Merchant Venturers' Technical
 College, 13
 Metallurgical Chemistry, 178, 198
 Middleton, T. H., 203
 Mills, E. J., 38, 52, 168
 Mond, Ludwig, 171
 More, H., 8
 Moreing, William, 124
 Moulton, Rt. Hon. Lord Justice,
 166, 245
 Müller, Hugo, 38
 Muter, John, 38

NATAL, 207
 National Physical Laboratory,
 187, 210 *et seq.*
Nature, 34 *et seq.*, 87
 Nevill (formerly Neison), E. N.,
 32, 38, 50, 52, 69
 Newlands, J. A. R., 32
 Nominations and Examinations
 Committee, 285
 Nottingham, University College,
 21

OBJECTS of the Institute, 51
 Odling, W., iii, 10, 32, 38, 52, 58,
 68, 76 *et seq.*, 103, 108, 208
 Officers, Past, 295
 Offices, 55, 82, 99, 114, 135, 147,
 166, 222
 "Official Chemical Appoint-
 ments," 183, 191

- Opposition to the Policy of the Council, 90
 Organic Chemistry, 257
 Organisation, Professional, 5, 24, 31 *et seq.*, 40 *et seq.*
 Original Subscribers, 50
 O'Sullivan, Cornelius, 72
 Oxford University, 21
- PAGE, F. J. M., 38
 Panizzi, Sir Anthony, 116
 Pattinson, John, 38
 Paul, B. H., 38
 Pedler, Sir Alexander, 277
 Perkin, Sir W. H., 38
 Perkins, F., 147
 Pettengill, John, 34, 41, 42
Pharmaceutical Journal, The, 41, 49, 62
 Pharmaceutical Society of Great Britain, 9, 40, 43, 62, 142, 182
 Pharmaceutical Works, Function and Scope of the Chemist in, 266
 Pharmacy Act (1868), 42, 46 *et seq.*, 62
 Physical Chemistry, 152
 Piesse, C. H., 30, 32, 38
 Pilcher, R. B., 128, 134, 152, 287
 Playfair, Lord, 11, 84
 Plunkett, Rt. Hon. H. C., 159
 Poisoning Cases, 207
 Postal Rates on Scientific Journals, 240
 Preliminary Examination, 125, 145, 147, 161, 179, 183, 198
 Premises, 55, 82, 99, 114, 116, 135, 147, 166, 213, 222, 270, 282
 Presidents, Past, i—iv, 295
 Priestley, 11, 48, 124
 Privy Council, 40, 46, 49, 62, 85, 124, 245
 Prizes, 59, 64
 Proceedings Committee, 285
 Professional Certificates, 60, 105, 106, 110, 133, 248
 Professional Conduct, 57, 60, 67, 70, 74, 83, 107, 119, 123, 133, 136, 146
 Professional Organisation, 5, 24, 31 *et seq.*, 40 *et seq.*
 Professors of Chemistry, 12, 89, 107, 253, 277, 281
 Public Analysts, 62, 63, 72, 112, 142, 145, 148, 152, 157, 159, 182, 183, 189, 204, 214, 218 *et seq.*, 231, 235, 246, 251, 266, 273 *et seq.*
- Public Analysts, Society of, 25, 38, 55, 70, 97, 214, 274, 275
 Public Health Officers Bill, 236
 Public Sanitation, 63
- QUALIFICATIONS for Membership (*see* Regulations)
 Qualification for Professional Chemists, The need of a, 23
 Qualifications for Public Analysts, 142
- RAMSAY, Sir William, 32, 186, 195, 196, 211, 215, 221, 264
 Rates, Local, 160
 Rayleigh, Rt. Hon. Lord, 187
 Reay, Rt. Hon. Lord, 146, 203
 Receptions, 72, 90, 138, 146, 161
 Redesdale, Rt. Hon. Lord, 77
 Redwood, T. Boverton, 24, 32, 37, 38, 69
 Register, 81, 103, 116, 164
 Registrar, 88, 106, 127, 134, 152, 191, 273, 276, 279, 287, 298
 Registration of Professional Chemists, 36, 140
 Regulations, 57, 59, 60, 68, 71, 73, 81, 90, 93, 99, 104, 105, 108, 110, 112, 125, 128, 138, 145, 146, 150, 152, 157, 198, 200, 220, 243, 257, 276, 278
 Research, 157, 225, 227, 239
 Retrospect, 282
 Reynolds, J. Emerson, 38, 52
 Robertson, G. H., 106, 127, 178
 Rolleston, Sir John, 166
 Roll of the Institute, 58, 64, 69, 82, 88, 95, 98, 300
 Roscoe, Rt. Hon. Sir Henry E., 58, 86
 Royal Charter, 39, 51, 74, 75 *et seq.*, 184, 245
 Royal College of Chemistry, 18, 128
 Royal College of Science, Dublin, 14
 Royal College of Science, London, 18
 Royal Commission on the Civil Service, 262, 268, 280
 Royal Commission on the Public Services in India, 207, 277
 Royal Dublin Society, 9
 Royal Indian Engineering College, 130

- Royal Institution, 9
 Royal Philosophical Society of Glasgow, 9
 Royal School of Mines, 18, 178
 Royal Society of Arts, 9, 10
 Royal Society of Edinburgh, 9
 Royal Society of London, 7, 8, 9, 258
 Royal Technical College, Glasgow, 16
 Rudolf, N. S., 232
 Runciman, Rt. Hon. Walter, 211
 Russell, Rt. Hon. T. W., 148
 Russell, W. J., iii, 10, 11, 32, 38, 60, 130 *et seq.*, 237
 Russell Square, 259

 ST. ANDREW'S University, 22
 Salamon, A. Gordon, 140, 174, 183, 195, 213, 260, 271, 279
 Sale of Food and Drugs Acts, 24, 46, 62, 72, 100, 113, 138, 142, 145, 148, 152, 158, 159, 182, 187, 189, 204, 218, 231, 242, 246, 251, 254, 266, 273, 280
 Scheele, 48
 Science and Art Department, 11
 Scotland, Association of Public Analysts of, 189, 205, 273
 Scotland, Local Government Board for, 189, 274
 Seal, 124
 Secretary, 24, 32, 50, 55, 106, 127, 134, 147, 152, 298
 Secretaries, Honorary Corresponding, 232, 285
 Sewage Disposal, Royal Commission on, 160
 Sheffield University, 22
 Site of New Building, 259
 Smith, R. Angus, 38, 50, 67
 Smithells, Arthur, 111
 Society of Arts, Journal of the (Royal), 10
 Society of Chemical Industry, 10, 72, 188, 210
 Society of Chemical Industry, Journal of the, 210
 Society of Public Analysts, 25, 30, 38, 55, 70, 97, 188, 215, 218, 274, 275
 Somerville, William, 185, 203
 South Africa, 246
 Special Committees, 291
 Spratt, Thomas, Bishop of Rochester, 7, 8
 Sprengel, H., 38
 State Chemistry, Committee on (*see also* Public Appointments Committee), 100
 Staveley-Hill, Henry, 203
 Stead, J. E., 195, 198, 211
 Stenhouse, Dr., 103
 Stevenson, Sir Thomas, iii, 24, 32, 38, 141, 142 *et seq.*, 183, 201, 210, 220
 Stevenson, John, 111, 168
 Stills, Licences for, 114, 206
 Stoneware Pipes, Standards for, 178
 Strachey, Sir Edward, 195
 Students, Registered, 96
 Subscriptions and Fees, 52, 81, 83, 135, 177, 222, 238
 Sutherland, D. A., 201

 TATLOCK, R. R., 38, 52, 215
 Teachers' Registration Council, 161
 Technical Education, 162
 Teed, F. L., 140
 Tendering for Appointments, 219, 236
 Teschemacher, E. F., 32, 38
 "Textile Industry, the Research Chemist in the Works with Special Reference to the," 279
 Textile testing, 234
 Thénard, 39
 Therapeutics, Pharmacology and Microscopy, 142, 147, 157
 Thomason, William, 178
 Thomson, J. Millar, iii, 10, 24, 32, 77, 127, 134, 152 *et seq.*, 179, 186, 195, 214, 244
 Thomson, Thomas, 11
 Thomson, William, 67
 "Thorium," 266
 Thorp, William, 32
 Thorpe, Sir Edward, 152, 180, 185
 Thudichum, L., 32
 Tidy, C. M., 63
 Tilden, Sir W. A., iii, 102 *et seq.*, 237, 245, 252, 253, 261, 264, 271, 279, 280
 Title of "Chemist," 40, 45 *et seq.*, 62
 Title of the Institute, ii, 40 *et seq.*
 Titles, Professional, 165
 Tookey, Charles, 24
 Trade, Board of, 40 *et seq.*, 51, 55, 56, 62

Treasurer, 50, 82, 130, 174, 297
 Treasury, The, 210, 213
 Tribe, A., 32
 Trinity College, Dublin, 14
 Trustees, 130
 Turner, Thomas, 198
 Tuson, R. V., 24, 32, 38, 50
 Tyndall, Prof., 86
 Tyne Social Chemical Society, 24
 Tyrer, Thomas, 180, 210

UNIVERSITY College, London, 19

VERSMAN, J. G., 32
 Vice-Presidents, Past, 295
 Voelcker, Augustus, 24, 32, 37, 38,
 63
 Voelcker, E. W., iv, 195, 197
 Voelcker, J. A., 148, 198, 204, 215,
 221, 252, 256

WANKLYN, J. A., 24, 32, 37, 38
 War Office, 263 *et seq.*
 Warrington, R., 72
 Way, J. T., 38
 Wertheimer, A., 182
 Wertheimer, J., 110
 White, Edmund, 266
 Wigner, G. W., 32, 38
 Williams, J., 32
 Williams, Mattieu, 32
 Williamson, A. W., 37, 38, 86
 Williamson, F. J., 124
 Williamson, Sydney, 124
 Wills, Thomas, 10
 Wilson, W., 32
 Winfrey, Sir Richard, 195
 Wöhler, 11
 Wollaston, W. H., 11
 Women, Admission of, 114
 Woodhouse, Sir James, 166
 Wright, C. R. Alder, ii, 24, 25 *et*
seq., 36, 38, 50, 51, 63, 77, 82,
 103, 130

chemistry of
and Ireland
The Institute of chem-
istry of Great Britain and
Ireland. History of the
institute: 1877-1914

383861

QD1
I63

Institute

UNIVERSITY OF CALIFORNIA LIBRARY

